The Kyuquot Sound Coastal Plan

May 20, 2003

Ministry of
Sustainable Resource Management
Coast and Marine Planning Branch

BRITISH COLUMBIA

105-04795/

National Library of Canada Cataloguing in Publication Data
British Columbia. Coast and Marine Planning Branch.
Kyuquot Sound Coastal Plan

Also available on the Internet.
Includes bibliographical references: p.
ISBN 0-7726-4911-1

1. Coastal zone management – Government policy - British Columbia – Kyuquot Sound Region. 2. Land use - British Columbia – Kyuquot Sound Region – Planning. I. Title.

HD319.B7B74 2003 333.91'7'097112
C2003-960034-3

Contents

Contents iii
Minister's Letter v
Acknowledgements vii
Acronyms and Definitions ix
1. Introduction 1
1.1. Location 1
1.2. Plan Rationale and Intent 1
1.3. Jurisdiction and Scope 2
1.4. Planning Process 3
2. Plan Area Description 5
2.1. Physical and Oceanographic Features 5
2.2. Biological Features 9
2.3. Social and Economic Profile 19
2.4. Economic Activities 21
2.5. Recent and Anticipated Economic Trends 25
3. Plan Framework and Direction 27
3.1. Use of the Plan 27
3.2. Strategic Direction: The Vancouver Island Land Use Plan 27
3.3. Planning Units and Unit Data 29
3.4. Uses and Activities 31
3.5. Use and Activity Recommendations 32
3.6. Determination of Acceptable Uses 32
3.7. Management Provisions 33
3.8. Management Emphasis 33
3.9. Planning Unit Direction 35
Unit 1 Tahsish Inlet 35
Unit 2 Fair Harbour 37
Unit 3 Pinnace Channel 39
Unit 4 Amai Inlet 41
Unit 5 Whiteley Island - Cachalot Inlet 43
Unit 6 Kyuquot Channel 45
Unit 7 Clear Passage 47
Unit 8 Ououkinsh and Malksope Inlets 49
Unit 9 Mission Group 51
Unit 10 Barrier Islands 53
Unit 11 Nicolaye and Crowther Channels 55
Unit 12 Surprise Island 59
Unit 13 Chamiss Bay 61
Unit 14 Hohoae and Moketas Islands 63
Unit 15 Jansen Bay 65
Unit 16 Lower Kashutl Inlet 67
Unit 17 Easy Inlet 69
Unit 18 Upper Kashutl Inlet 71
Unit 19 Brooks, Checleset, Kyuquot Approaches 73
4. Plan Assessment 75
4.1. Environmental Implications of Recommendations 75
4.2. Economic Implications of Recommendations 76

5. Summary and Follow-up 79
5.1. Summary of Plan Recommendations 79
5.2. Information Limitations 79
5.3. Summary of Recommendations for *Land Act* Notations 80
5.4. Commercial Recreation Operating Practices for Bird Colonies and Migratory Bird Habitat 80
5.5. First Nations Considerations 80
5.6. Recommended Projects to Enhance Economic Development Opportunities 81
5.7. Marine Conservation & Integrated Coastal Management 82
5.8. Plan Variation Process 83
5.9. Plan Review and Amendment 84
5.10. Summary of Follow Up Activities 84
Appendix 1. Governance Principles for Sustainable Resource Management 85
Appendix 2. First Nations, Agency, and Interest Group Discussions 87
Appendix 3. VILUP Designations 93
Appendix 4. Decision Tools 97
Appendix 5. Supporting Information for Environmental Risk 105
Appendix 6. References 111

BRITISH COLUMBIA

May 20 2003

Reference: 32882

Dear Reader:

As Minister of Sustainable Resource Management and Minister responsible for Land and Water British Columbia Inc. (LWBC), it is my pleasure to approve the Kyuquot Sound Coastal Plan.

This plan has been prepared in accordance with provincial jurisdiction over coastal and foreshore areas of British Columbia's coast. It is intended to assist LWBC and other provincial agencies when considering applications for coastal tenure. It also assists the local community and the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations by identifying opportunities for sustainable development, conservation and recreation. It will prove a useful tool for individual development proponents, including local entrepreneurs, by identifying in advance the opportunities, constraints and limitations to various types of Crown land and marine uses that may be found in Kyuquot Sound.

This plan and the process used in its preparation satisfy the governance principles for sustainability that have been developed by this ministry on behalf of government. I am pleased to note that plan development has benefited from positive participation by the Comox Strathcona Regional District and the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations Band Council.

As a living document, this plan will likely be subject to variations and amendments, in accordance with changing circumstances and new information. In the meantime, I look forward to seeing this plan play its role in fulfilling the government's objective of strengthening the economy of our rural heartlands.

Yours truly,

Stanley B. Hagen
Minister

Ministry of Sustainable Resource Management

Office of the Minister

Mailing Address:
PO Box 9054 Stn Prov Govt
Victoria BC V8W 9E2

Location:
Parliament Buildings, Victoria

Acknowledgements

The Kyuquot Sound Coastal Plan was shaped by the advice and kind support of many individuals. Special thanks are extended to the Regional District of Comox Strathcona for assisting the Ministry with public and technical input to the Plan, particularly Gerard LeBlanc, Judy Walker, Lou Varella (Regional District staff) and Tom Pater (Regional District Board).

The Plan could not have been successfully prepared without the participation of the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations Band Council and members. The advice of Band Council consultants Gary Ardron and Ron Frank (Shelterwood Forest Management) is also appreciated.

The Plan has benefited from hard work and insight of a plan advisory committee, comprised of the following local community members: Cynthia Carlos, Frank Chidley, Nicalena Chidley, Nancy Gillette, Reuben Gillette, Natalie Jack, Leonard John, Sam Kayra, Teri Lavigne, Tom Pater and David Pinel. Joey Laukkanen (prawn fisher) also provided important information at the advisory committee meetings.

Several provincial and federal government staff made important contributions to the Plan. Thanks are extended to Barron Carswell, Bill Harrower (MAFF), David Cruickshank (Regional Office, MSRM), Duncan Williams, Keith Anderson, Richard Brunning and John Willow (LWBC), Bruce McKerricher (Timber Sales BC), Charlie Cornfield (MOF, Campbell River), Kevin Conley (DFO, Nanaimo), Michael Dunn, Krista Amey, and staff (Canadian Wildlife Service, Vancouver), Jim Naylor (Canadian Coast Guard, Vancouver), and Andrew Day (West Coast Vancouver Island Aquatic Management Board).

The plan was prepared by Stephen Connolly, John Bones, Rob Paynter and Graham Winterbottom (CMPB, Victoria) with technical and mapping support from Rick Deegan, Simon Norris and Carol Ogborne (MSRM, Decision Support Services). Valuable consulting assistance was provided by Violet Kormori, Rupert Wong, Gary Holman and Bruce Whyte.

Acronyms and Definitions

CMPB: Coast and Marine Planning Branch, MSRM.

CCG: Canadian Coast Guard, Fisheries and Oceans Canada.

CDC: Provincial Conservation Data Centre, Ministry of Water, Land and Air Protection.

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

CWS: Canadian Wildlife Service, Environment Canada.

DFO: Federal Department of Fisheries and Oceans (officially known as Fisheries and Oceans Canada).

LWBC: Land and Water British Columbia Inc.

MAFF: Provincial Ministry of Agriculture, Fisheries and Food.

MEM: Provincial Ministry of Energy and Mines.

MOF: Provincial Ministry of Forests.

MSRM: Provincial Ministry of Sustainable Resource Management.

RDCS: Regional District of Comox Strathcona.

WLAP: Provincial Ministry of Water, Land and Air Protection. This agency includes the provincial park and protected areas management and planning function.

Aquaculture Capability: The likelihood of an area's biological, physical or oceanographic attributes to successfully accommodate the growing or cultivation of shellfish, finfish or marine plants for commercial purposes, using standard methods and equipment. In the case of finfish capability, ratings in this Plan are drawn from an "aquaculture opportunity study" map, which included capability as well as government siting criteria associated with other resources and land designations.

Blue Listed Species: Includes any indigenous species or subspecies considered to be vulnerable in British Columbia.

Foreshore (intertidal) area: The area between the mean high tide and low tide mark (i.e. below zero tide).

Invertebrates: Includes red, green urchins, octopus, crab, prawn, shrimp, sea cucumber.

Land Act Notation of Interest: A notation on LWBC reference maps of an interest in an area of Crown land by another government agency. It ensures an initial referral to agencies whose particular mandate, programs or interests may be affected by the issuance of a tenure, and provides the opportunity for the affected agency to identify priority issues, concerns or conditions. It may be used over areas where further planning is contemplated. It does not preclude the acceptance of land applications.

Land Act Reserve: A reserve established on LWBC reference maps to temporarily withdraw Crown land from disposition by tenure. A reserve is placed over an area to permit other agencies to undertake planning, to provide temporary protection or to maintain options for future use.

Nearshore area: The subtidal area below low tide mark (i.e. below zero tide), generally extending to the 20 metre bathymetric depth.

Offshore area: the subtidal area seaward of the 20 metre bathymetry depth.

OA1: Finfish aquaculture opportunity study map category (Opportunity Area 1), used to denote areas with high to moderate biophysical capability for finfish aquaculture; and which meet current government siting criteria.

OA2: Finfish aquaculture opportunity study map category (Opportunity Area 2), used to denote areas with low to poor biophysical capability for finfish aquaculture; and which meet current government siting criteria.

Red Listed Species: Includes any indigenous species or subspecies that have, or are candidates for status as extirpated, endangered, or threatened species in British Columbia.

Tenure: A legal right to occupy and use Crown land under the *Land Act*. A tenure may take the form of a permit, license of occupation or lease. The type of tenure is normally dictated by LWBC policy and conveys different rights, terms and conditions of use and occupancy.

UREP: A *Land Act* reserve or notation of interest established for the "use, recreation and enjoyment of the public."

Upland: The terrestrial area extending approximately 200 meters inland from the highest tide line.

1. Introduction

1.1. Location

Kyuquot Sound is situated on the west coast of Vancouver Island, British Columbia (Figure 1), to the north of Nootka Sound and south of the Brooks Peninsula. The Plan Area extends approximately 60 kilometers from east to west, and encompasses approximately 545 kilometers of shoreline and 550 square kilometers of coastal waters.

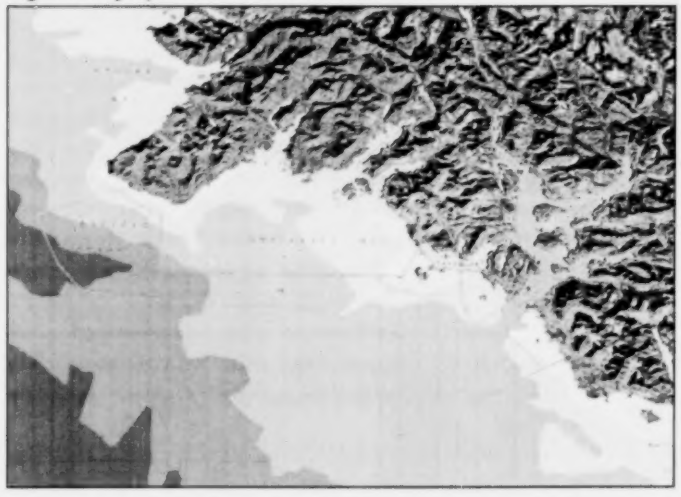
Figure 1: Kyuquot Sound, regional setting

The area lies within the traditional territory of the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations, northernmost of the Nuu'chah'nulth nations. It is within the administrative boundaries of the Regional District of Comox Strathcona.

The Kyuquot Sound Plan Area (Figure 2) includes the waters of Kyuquot Sound, Malksope Inlet, and the southeast side of Ououkinsh Inlet. The Plan Area also extends westward to include an offshore area southwest of the Brooks Peninsula.

The Plan Area does not include land or waters associated with adjacent provincial parks, which consist of the Brooks Peninsula Provincial Park, Tahsish Provincial Park, Checleset Bay Ecological Reserve, Dixie Cove Marine Park, and Rugged Point Marine Park.

Figure 2: Kyuquot Sound Coastal Plan Area



1.2. Plan Rationale and Intent

Many coastal communities in British Columbia have experienced significant economic decline and population loss due to reductions in industrial forestry and commercial fishing. Many of those communities are looking for opportunities to diversify and expand their economies while protecting sensitive resources and values. A

priority of the Ministry of Sustainable Resource Management (MSRM) is to use coastal planning to enhance sustainable economic development opportunities of coastal communities (including First Nations communities) while maintaining environmental values.

The Kyuquot Sound Plan Area currently supports a range of economic activities. These include various commercial fisheries, finfish aquaculture, shellfish aquaculture, log handling and storage, marine transportation, and public and commercial recreation. The Plan Area also contains an array of sensitive resources and cultural values. These values and issues were reflected in the Vancouver Island Summary Land Use Plan approved in 2000, which identified Kyuquot Sound as a high priority area for coastal planning. Through its coastal plans, the Ministry of Sustainable Resource Management (MSRM) identifies development opportunities and provides land management recommendations that foster economic development and environmental protection. These outcomes benefit coastal communities and the province, and are consistent with the provincial government's strategy for revitalizing the economy of British Columbia's "heartlands."

The provincial government is also committed to increasing the role and benefits of First Nations in economic activities. The Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations have used the Kyuquot Sound area for centuries and the use and health of its resources remain vital to their cultural and economic well-being. This Plan attempts to respect and accommodate these uses, while reinforcing their participation in economic activities.

The Kyuquot Sound Coastal Plan provides the basis for coastal development on an environmentally sustainable basis. This Plan is consistent with the MSRM governance principles for sustainability, presented in Appendix 1.

1.3. Jurisdiction and Scope

Jurisdiction[1] in the coastal zone is complicated by the relationship between land (including seabed) ownership and legislative authority over resources. There is a common public misconception that the Province has no jurisdiction or role in coastal management, due to federal government authority over fisheries management, marine mammal management, migratory birds, and marine transportation and safety, and the high profile of these issues in coastal communities.

The Province, however, is an important land owner in the coastal zone. The Province owns the foreshore (intertidal) areas of its coastline. In addition, the Province owns coastal "inland waters", or waters "within the jaws of the land" (*intra fauces terrae*), and the lands covered by these waters. Inland waters are waters within an indented coastline, such as harbours, bays and estuaries, including areas between headlands along the outer coast. The Supreme Court of Canada, in a 1984 decision, also confirmed the Province's ownership of the waters and the lands, minerals and other natural resources of the seabed and subsoil in the Georgia, Juan de Fuca, Johnstone and Queen Charlotte Straits. Thus, many sub-tidal areas are also owned by the Province.

Offshore areas along British Columbia's western coastline from the low water mark, or from the boundaries of inland waters, seaward to the territorial limit are owned by the federal government.

Accordingly, the Province's ownership and legislative jurisdiction over such matters as the management of provincially owned public lands, provide the rationale for provincial coastal planning, park and ecological reserve establishment, and tenure of coastal foreshore and inland waters.

Local governments and private property owners also influence coastal management activity through zoning by-laws, regulations and development requirements, and upland owner riparian rights. In addition, First Nations have legally established Aboriginal rights that may be potentially affected by coastal developments, and which must therefore be taken into account by the provincial government in the decision making process for foreshore and nearshore use applications. Provincial consultation policies reflect recent court decisions and require provincial agencies to seek to accommodate First Nations interests in land use decision making processes.

---

[1] This overview is neither a legal interpretation, nor a position statement of the Province of British Columbia; nor does it address First Nations' rights and title issues.

The Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations are in the treaty negotiation process with the provincial and federal governments. These First Nations have made claims of rights and title over land and waters in the Plan Area.

This Plan provides recommendations for acceptable uses in the foreshore and nearshore, which is under provincial jurisdiction. These recommendations address a range of tenure programs that are administered by Land and Water British Columbia Incorporated (LWBC). The Plan also addresses recreation and conservation values that should be reserved or limited with respect to tenure opportunities. The Plan does not replace the tenure referral process of LWBC, nor does it imply that types of applications deemed acceptable in the Plan will be approved by LWBC after the referral process is completed.

This Plan does not make recommendations regarding use of private land, federal land, or Indian Reserves. Its recommendations are not intended to limit any treaty negotiations or settlements that may occur respecting foreshore and nearshore rights, ownership or uses. Its recommendations are also not intended to alter or interfere with provincial legislation or local area by-laws, although it is preferred that local government plans will be consistent with this Plan.

1.4. Planning Process

The planning process used to develop and complete the Kyuquot Sound Coastal Plan is generalized in Table 1. The process was led by government staff and took a consultative approach to public and interest group engagement, rather than consensus-based negotiation using stakeholder planning tables.

Table 1: Generalized Process for the Kyuquot Sound Coastal Plan

May 2002	Confirm provincial technical team and terms of reference Confirm process with Ka:'yu:'k't'h and Che:k'tles7et'h' Nation and local government
June 2002	Develop and acquire resource data and appropriate map products Establish plan advisory committee comprising representatives of Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council, stakeholders, and Regional District of Comox Strathcona (RDCS) representatives
July / August 2002	Hold initial discussions with advisory committee Hold first Plan open house
September/ October 2002	Develop draft planning unit recommendations and review with advisory committee Review draft Plan products with Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council
November 2002	Make Plan revisions with advisory committee
December 2002 / January 2003	Post draft Plan on website Review draft Plan with stakeholder groups, government agencies; make appropriate revisions
February 2002	Develop economic and environmental assessment of the Plan Hold final public open house & meeting with advisory committee
February/March 2003	Final review and refinement of draft Plan with agencies and Ka:'yu:'k't'h and Che:k'tles7et'h' staff Post draft final Plan on website Formal review by RDCS
April 2003	Formal review by Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council Complete Provincial government approval process
May 2003	Sign-off by Minister of SRM Public announcement of Plan

Consultation with the public took place primarily through public open house meetings, held on August 21, 2002 and February 27, 2003.

The Plan was also reviewed with interest groups, stakeholders and industry associations at various stages of the process. A list of these groups and meetings is provided in Appendix 2.

The Regional District of Comox-Strathcona (RDCS) worked on behalf of MSRM to establish a plan advisory committee to provide feedback on the draft plan to the Province and the Regional District Board. That advisory committee met on six occasions between August, 2002 and March, 2003. Advisory group meetings were open to the public and took place on Walters Island and in Houpsitas.

Two meetings were held with the West Coast Vancouver Island Aquatic Management Board, and representatives of that body also participated in plan events and provided comments on the draft Plan.

Federal and provincial agencies provided important advice and information during Plan development. In addition, a number of provincial agencies participated in final review of the Plan, prior to its approval. A listing of participating provincial and federal agencies is provided in Appendix 2.

Representatives of the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations participated with government staff in the development of the Plan, and participated in the advisory committee. A letter regarding Plan support from the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations is provided in Appendix 2.

A statement from the Regional District of Comox Strathcona is also provided in Appendix 2, indicating their intent to use the Plan as a guide for developing land use regulations and as a resource reference for ongoing land use referrals and development proposals.

2. Plan Area Description

2.1. Physical and Oceanographic Features

Landscape

The landforms of Kyuquot Sound reflect the geology and climate common to the west coast of Vancouver Island. The Sound is surrounded by the steep Vancouver Island Ranges, which run predominantly northwest to southeast. Peaks of over 1500m lie within 15 km of the Sound. The main river valleys and inlets were shaped by glaciers and show characteristic "U" shaped cross-section. Glaciers also deposited beds of mixed gravel along valley bottoms. As the glaciers retreated, sea level rose to create today's landscape of fjords and rocky islands. Present-day shorelines are generally steep except where recent geological processes have formed new beaches.

Kyuquot Sound also contains the Barrier Islands which form an arc in front of the Sound. Union Island, the largest in the Plan Area, effectively shelters Kashutl and Tahsish inlets from Pacific swells. These and other islands dominate the shoreline configuration of the outer coast of Kyuquot Sound. Offshore, the continental margin is a broad submarine shelf stretching about 30 km from shore, with a seafloor generally less than 200 m deep.

Kashutl, Tahsish, Ououkinsh, and Malksope Inlets are deep fjords. Only the waters around the Mission Group Islands and parts of the Bunsby and Cuttle Islands can be considered shallow.

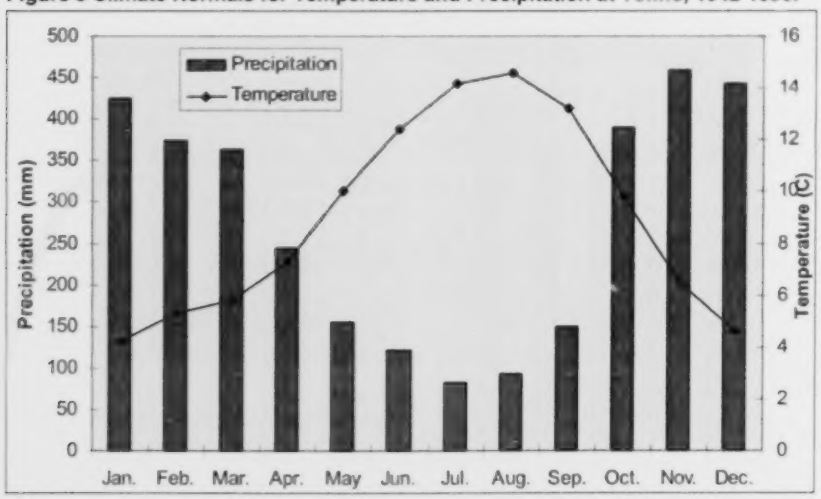
Climate

There are no climate statistics available for the Plan Area, however Tofino airport in Clayoquot Sound, about 150 km southeast of Kyuquot village, provides data for a comparable area.

Temperatures in the Plan Area are moderate throughout the year (Figure 3). Daily mean temperatures for Tofino range from 4.2°C in January, to 14.6°C in July. Although sub-zero temperatures and snow occur virtually every year, the above-freezing average temperatures permit year-round plant growth, an important factor in the productivity of the region's forests.

Precipitation levels are extremely high on the West Coast. Tofino receives nearly 3,300 mm per year. Most of the rain falls through the winter months although rain is also a regular occurrence in summer. The area also is subject to occasional fog, with observations at Spring Island suggesting an average of 13 fog days per year, with fog more prevalent in the winter months.

Figure 3 Climate Normals for Temperature and Precipitation at Tofino, 1942-1990.

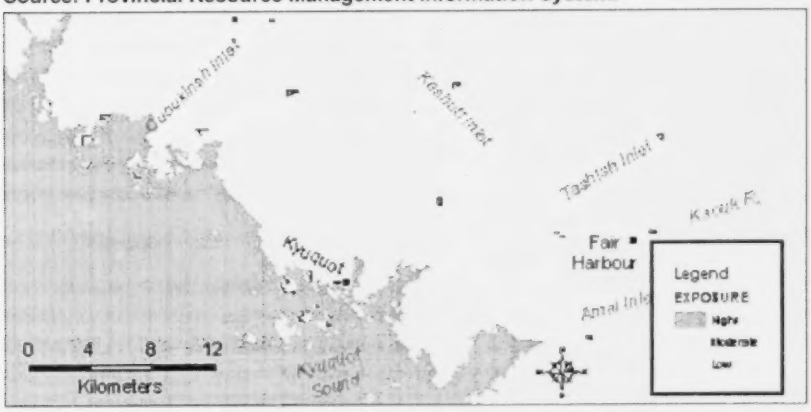


Within the Plan Area local climatic variations are evident. Locations on the exposed west coast tend to be somewhat warmer in winter and cooler in summer, with winds that tend to parallel the coastline. Away from the west coast, inlet areas tend to receive more precipitation, and are more subject to cold outflow winds in wintertime.

Wind and Waves

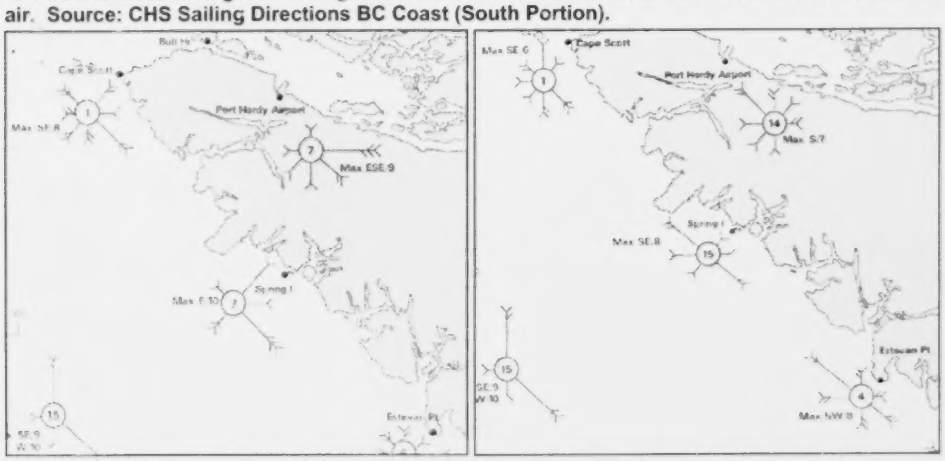
The exposed west coast portions of the Plan Area have some of the most vigorous wind and wave conditions in the province (Figure 4). In exposed areas, high-energy wave climate creates shorelines of rocky headlands with sandy bays. Such shorelines pose serious challenges to many human activities. Sheltered inlets have lower wave-energy conditions that present fewer constraints.

Figure 4: Exposure regimes as an indicator of wave climates at Kyuquot. Source: Provincial Resource Management Information System.



Winds in the Plan Area are strongest in winter and tend to run parallel to the shoreline, from the southeast or northwest. While summer winds are generally milder, storms at any season can produce winds which threaten the safety of marine transportation, fishing, and other activities.

Figure 5: Wind Roses show direction and strength of winds at stations near Kyuquot in January (left) and July (right). Length of arrow indicates proportion of time wind comes from that direction, number of 'feathers' on arrows indicates strength of strongest winds from that direction, and number in circle shows percentage of calm air. Source: CHS Sailing Directions BC Coast (South Portion).

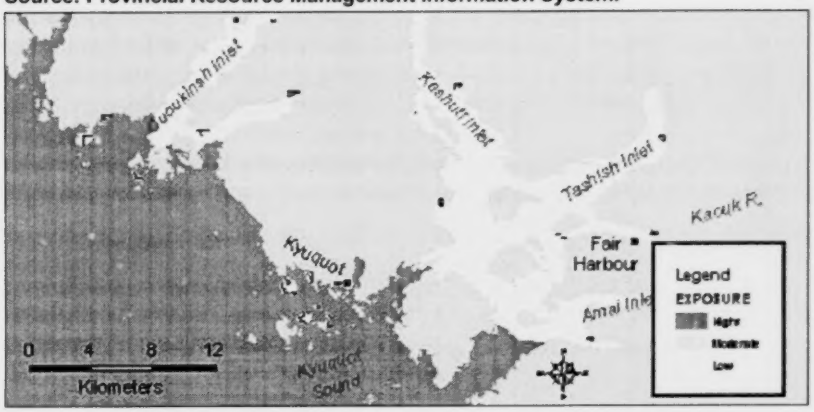


Within the Plan Area local climatic variations are evident. Locations on the exposed west coast tend to be somewhat warmer in winter and cooler in summer, with winds that tend to parallel the coastline. Away from the west coast, inlet areas tend to receive more precipitation, and are more subject to cold outflow winds in wintertime.

Wind and Waves

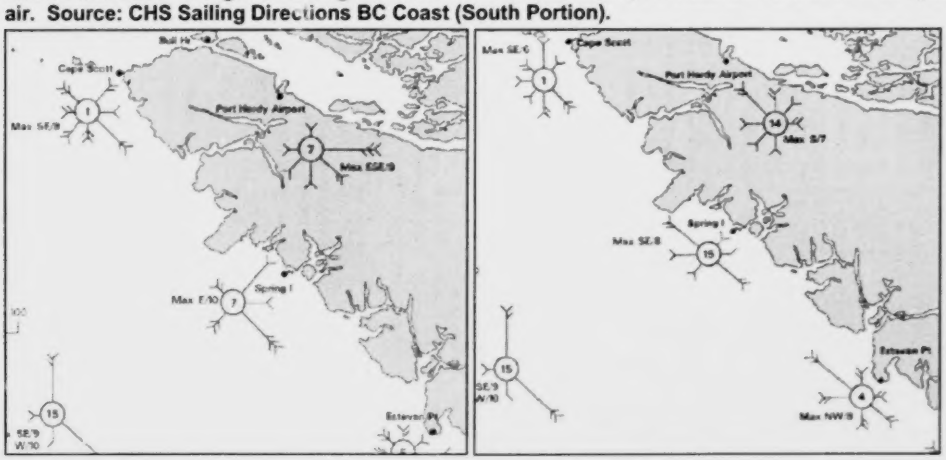
The exposed west coast portions of the Plan Area have some of the most vigorous wind and wave conditions in the province (Figure 4). In exposed areas, high-energy wave climate creates shorelines of rocky headlands with sandy bays. Such shorelines pose serious challenges to many human activities. Sheltered inlets have lower wave-energy conditions that present fewer constraints.

Figure 4: Exposure regimes as an indicator of wave climates at Kyuquot. Source: Provincial Resource Management Information System.



Winds in the Plan Area are strongest in winter and tend to run parallel to the shoreline, from the southeast or northwest. While summer winds are generally milder, storms at any season can produce winds which threaten the safety of marine transportation, fishing, and other activities.

Figure 5: Wind Roses show direction and strength of winds at stations near Kyuquot in January (left) and July (right). Length of arrow indicates proportion of time wind comes from that direction, number of 'feathers' on arrows indicates strength of strongest winds from that direction, and number in circle shows percentage of calm air. Source: CHS Sailing Directions BC Coast (South Portion).

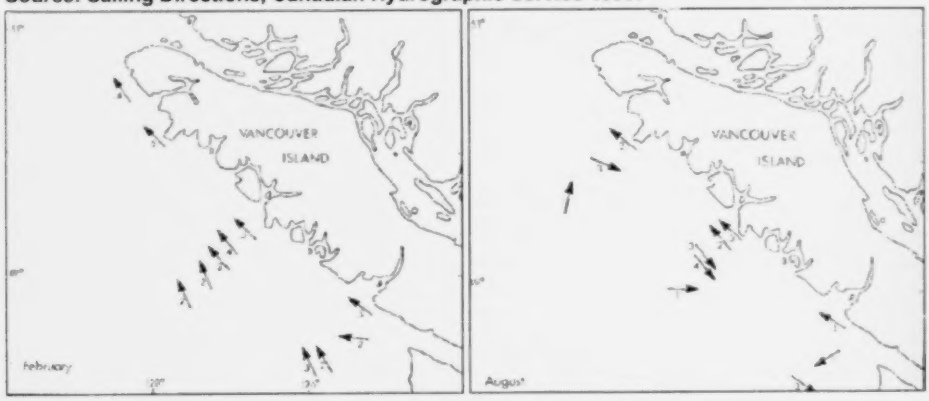


Currents and Tides

The North Pacific Current is a major ocean flow, fed by the Japan Current. This large current moves heat from the tropics toward the polar region. It flows east across the Pacific Ocean, to the west coast of North America. One portion of the current curls south to form the California Current, and another turns north and forms the Alaska Current.

The North Pacific Current generally reaches North America at Vancouver Island. However the current moves from north to south with the seasons. In winter, the current shifts southward resulting in generally northward offshore currents at Kyuquot. In summer, the North Pacific Current moves north and these northerly currents weaken. At times, summer currents may shift to weak southward (Figure 6).

Figure 6: Nearshore currents on West Coast of Vancouver Island. Winter currents shown at left, summer at right. Source: Sailing Directions, Canadian Hydrographic Service 1990.



These currents have a major effect on the climate of the area. They moderate temperatures and provide the moisture that results in precipitation.

Tides in the Plan Area typically range between 3 and 4 m. When the pull of the sun and moon are aligned, the range from low to high tide is most extreme. Low tides expose mud flats at river estuaries, and sandy beaches on the outer coasts. Various marine species are adapted to specific portions of the intertidal zone, including many of the commercially-important shellfish species. Tidal impacts on marine transportation tend to be centered on the numerous 'drying rocks' which form hazards to navigation either when exposed by low tides, or when just below the surface at higher water levels.

Figure 7 presents a typical monthly range of tides at Winter Harbour, a community on Quatsino Sound which has a tidal regime similar to Kyuquot Sound. In addition to the illustrated monthly variation there is some range over the course of the year. Spring tides have a normal maximum range of 14.8 feet, whereas the mean tidal range is 9.5 feet.

Figure 7: Typical Tidal Curve for Winter Harbour over a Lunar Month. Source Canadian Tide and Current Tables (Vol. 6), Canadian Hydrographic Service, 2001

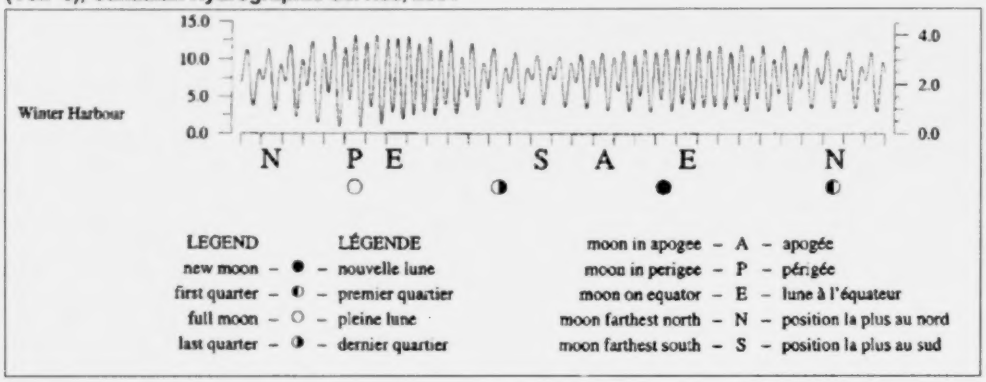
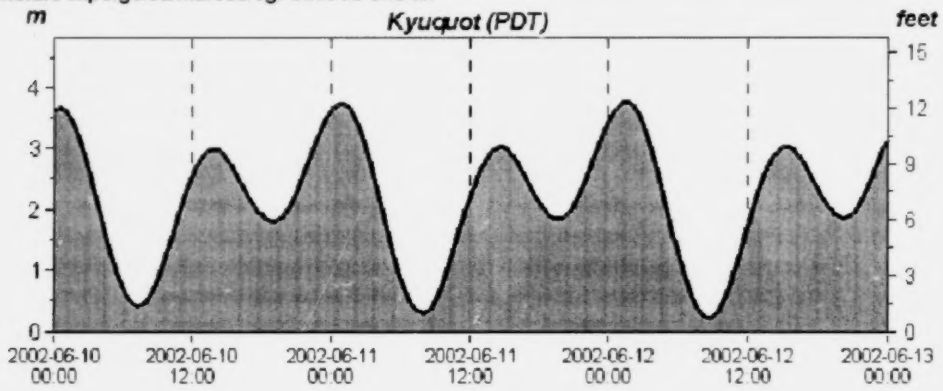

Winter Harbour
15.0
10.0
5.0
0.0
4.0
2.0
0.0
N P E S A E N
LEGEND
new moon – ● – nouvelle lune
first quarter – ◐ – premier quartier
full moon – ○ – pleine lune
last quarter – ◑ – dernier quartier
LÉGENDE
moon in apogee – A – apogée
moon in perigee – P – périgée
moon on equator – E – lune à l'équateur
moon farthest north – N – position la plus au nord
moon farthest south – S – position la plus au sud

Figure 8: Typical semi-diurnal tides for 3 days in Kyuquot (new moon) Source CHS website http://www.lau.chs-shc.dfo-mpo.gc.ca/marees/cgi-bin/tide-shc.tcl

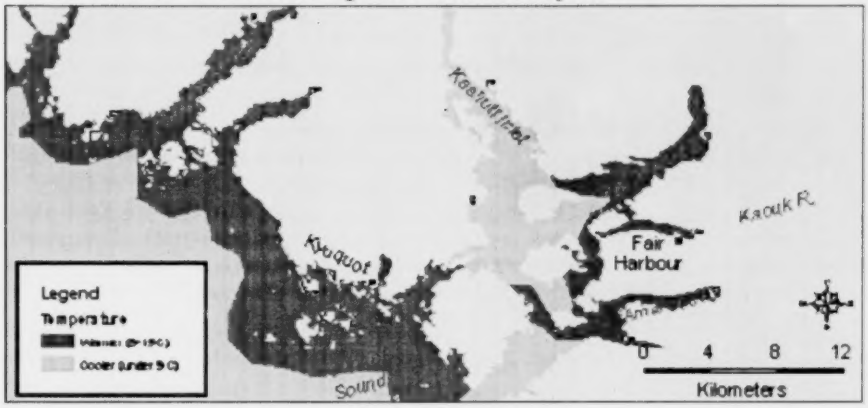


Kyuquot tidal fluctuations follow a semi-diurnal pattern with two high (one higher) and two low (one lower) tides every 24 h 50 min. as typified in Figure 8.

Salinity and Oxygenation

The temperature of water in Kyuquot Sound is largely controlled by the temperature of the Pacific Ocean, which is generally cool at this latitude (Figure 9). In summer, shallow nearshore waters become warmer, providing suitable conditions for shellfish production.

Figure 9: Temperature measured on the seabed for the waters of Kyuquot Sound. Source: Provincial Resource Management Information System.



The salinity and oxygenation of sea water are important controls on sea life. Most species have adapted to either salt water or to fresh, with only a few specialists adapted to the various mixtures in-between. Salinity and oxygenation affect both wild and cultivated populations of saltwater fish and shellfish, which require high salinity and oxygen levels. Salinity is mainly affected by runoff from freshwater streams, while oxygenation is promoted by wave, tidal and current actions.

Major streams entering the Plan Area include the Kaouk, Artlish, Tahsish, Kauwinch, Malksope and Ououkinsh Rivers. Peak flows normally occur during winter as a result of heavy rainfall. In Spring, snowmelt from adjacent peaks also creates moderately high flows. In narrow inlets and other constrained waters, large flows from streams can result in layers of fresh water over saltwater within the marine environment.

The inlets branching from Kyuquot Sound generally have lower sea surface salinity rates due to this inflow of fresh water, most notably at estuaries. The seasonal impact of rainfall variation is reflected in salinity values which drop in winter as streams deliver rains to tidewater.

Tidal mixing in the Sound is generally vigorous, and there are no stagnant saltwater lagoons in the Plan Area.

2.2. Biological Features

Shore Zone Habitat

The Kyuquot Sound Plan Area consists of a diverse mixture of moderately deep fjords as well as shallow, exposed near shore habitat extending westward to the outer coast. The Kyuquot Sound area is unique from the rest of the west coast of Vancouver Island due to the high proportion of shallow near shore habitat that is characterized by a diversity of productive marine habitat types including extensive kelp beds, fringing reefs habitat, submerged pinnacles, exposed rocky islets and wide-spread intertidal habitat.

Three distinct marine habitat types are found in the Plan Area. These habitat types are: moderately deep (<200 m) protected inlet habitat; shallow more exposed shoreline habitat, and deeper off shore habitat. Many marine species utilize more than one habitat type during varying life stages and are dependent on the nutrient cycling that exists between them.

Protected Inlet Habitat

Moderately deep "*inlet habitat*" represents 23.4% of the Plan Area, and includes the waters of Kashutl Inlet, Tahsish Inlet, Cachalot/Amai Inlet as well as Kyuquot Channel and the waters surrounding Hohoae and Moketas Islands (see Figure 10). Protected inlet waters dominate the eastern portion of the Plan Area, and are characterized by mud-dominated substrates at slopes ranging from 5 to 20%, to depths of 200 meters.

Figure 9: Temperature measured on the seabed for the waters of Kyuquot Sound.
Source: Provincial Resource Management Information System.

The salinity and oxygenation of sea water are important controls on sea life. Most species have adapted to either salt water or to fresh, with only a few specialists adapted to the various mixtures in-between. Salinity and oxygenation affect both wild and cultivated populations of saltwater fish and shellfish, which require high salinity and oxygen levels. Salinity is mainly affected by runoff from freshwater streams, while oxygenation is promoted by wave, tidal and current actions.

Major streams entering the Plan Area include the Kaouk, Artlish, Tahsish, Kauwinch, Malksope and Ououkinsh Rivers. Peak flows normally occur during winter as a result of heavy rainfall. In Spring, snowmelt from adjacent peaks also creates moderately high flows. In narrow inlets and other constrained waters, large flows from streams can result in layers of fresh water over saltwater within the marine environment.

The inlets branching from Kyuquot Sound generally have lower sea surface salinity rates due to this inflow of fresh water, most notably at estuaries. The seasonal impact of rainfall variation is reflected in salinity values which drop in winter as streams deliver rains to tidewater.

Tidal mixing in the Sound is generally vigorous, and there are no stagnant saltwater lagoons in the Plan Area.

2.2. Biological Features

Shore Zone Habitat

The Kyuquot Sound Plan Area consists of a diverse mixture of moderately deep fjords as well as shallow, exposed near shore habitat extending westward to the outer coast. The Kyuquot Sound area is unique from the rest of the west coast of Vancouver Island due to the high proportion of shallow near shore habitat that is characterized by a diversity of productive marine habitat types including extensive kelp beds, fringing reefs habitat, submerged pinnacles, exposed rocky islets and wide-spread intertidal habitat.

Three distinct marine habitat types are found in the Plan Area. These habitat types are: moderately deep (<200 m) protected inlet habitat; shallow more exposed shoreline habitat, and deeper off shore habitat. Many marine species utilize more than one habitat type during varying life stages and are dependent on the nutrient cycling that exists between them.

Protected Inlet Habitat

Moderately deep "*inlet habitat*" represents 23.4% of the Plan Area, and includes the waters of Kashutl Inlet, Tahsish Inlet, Cachalot/Amai Inlet as well as Kyuquot Channel and the waters surrounding Hohoae and Moketas Islands (see Figure 10). Protected inlet waters dominate the eastern portion of the Plan Area, and are characterized by mud-dominated substrates at slopes ranging from 5 to 20%, to depths of 200 meters

Figure 10. View north to the Tahsish River illustrating typical protected inlet habitat found in eastern portion of Plan Area (Violet Kormori photo).

Estuarine habitat can be found at the head of each inlet where major stream systems meet the ocean, as well as along shoreline areas where small streams enter the ocean. These valuable and highly sensitive areas support rearing habitat for numerous fish and invertebrate species. Intertidal sloughs and estuaries also provide refuge for ducks, geese and shorebirds from winter storms. Inlets provide critical feeding areas and migration corridors for fish as well as marine mammals and birds. Inlet waters also provide critical habitat for prawns, crabs, sea urchins and sea cucumbers.

Sea grass beds provide critical habitat for a variety of species including geese, swans and ducks, crab, herring, and juvenile salmon. These beds are most commonly found in protected waters in the lower intertidal and shallow subtidal zones and are common at the head of many inlets. Sea grasses within the Plan Area include eelgrasses (*Zostera marina and Zostera japonica*) and surf grass (*Phyllospadix sp*) with eelgrass being the dominant marine vascular plant in the inlet waters. Sea grasses contribute to primary production through photosynthesis and also serve as a food source to herbivores. Sea grasses also produce and release dissolved organic nutrients than can be absorbed directly by marine invertebrates. Sea grasses are structurally important for providing substratum for microalgae and invertebrates as well as nursery habitat for juvenile salmonids and shellfish species. Another important function of sea grasses is their well-developed root systems that trap sediment and nutrients and stabilize marine substrates. Significant eelgrass beds can be found at the head of most inside inlets with particularly large beds observed in the estuaries of the Tahsish River, Artlish River, Chamiss Creek and Amai Creek. Eelgrass beds are recognized as critical fish habitat in the coastal ecosystem and can be easily disturbed by human activities. Surf grass is more prevalent in exposed near shore habitat, whereas localized eelgrass beds flourish in protected muddy bays and tidal mudflats found on Spring Island, McLean Island, Mission Island and Aktis Island as well as along the outside coast in the Malksope River, Ououkinsh River, and Clanninick Creek estuaries.

Exposed Near Shore Habitat

Approximately 17.1% of the Kyuquot Sound Plan Area consists of exposed near shore habitat, including the Mission Group area, Clear Passage, Kyuquot village (Nicolaye and Crowther channels) as well as the Malksope and Ououkinsh Inlets (see Figure 11). Coastal near shore habitats are generally considered to have the highest ecological significance and consist of high value salt marshes, eel grass beds, tidal flats, canopy kelp beds, subtidal rocky reefs and localized nutrient-rich upwelling areas. The majority of over 1.4 million known marine organisms are benthic, with 98% of them living in the intertidal or shallow near shore habitat. Shore zone habitats are dominated by high energy, open ocean conditions with shoreline characteristics in the Plan Area consisting of a relatively even distribution of sandy, mud-covered or rocky substrate types. Intertidal and shallow subtidal rocky reefs provide a highly complex benthic structure important for the production of ground fish species including lingcod (*Ophiodon elongatus*) and many rockfish species (*Sebastes sp*). These near shore features also provide a diverse habitat for micro- and macro-algae, benthic invertebrates and many species of non-commercial fish.

Figure 11. View east towards mainland Vancouver Island from one of the Barrier Islands in Unit 10. This shallow, rocky exposed habitat is typical of productive nearshore habitat (Violet Kormori Photo).

Marine plant groups consist of the microscopic marine floating algae or "phytoplankton", the marine vascular plants or "sea grasses," and marine attached algae or "seaweeds". Phytoplankton provide the basis of the ocean food web. These minute, single celled plants are eaten by zooplankton, which in turn are the food for planktivorious fish, vertebrates such as salmonids, herring, and invertebrates such as clams, sea anemones and other sea creatures. With the Kyuquot Sound Plan Area, the combination of nutrient rich upwelling areas and shallow warm water creates optimal conditions for primary production during the summer months. An indication of high marine productivity in the Plan Area is high concentrations of phytoplankton sometimes referred to as "algal blooms", which can affect light penetration into the water column and cause perceptible colour change. Some plankton species produce potent biotoxins that are concentrated when the algae are consumed by certain benthic invertebrates. With bivalves in particular, these blooms pose a seasonal public health hazard in the Plan Area. Other phytoplankton species like the diatom *Chaetoceros sp.* reproduce in long chains and have spicules that can irritate the lamellae of fish. *Chaetoceros sp.* pose a risk to fish farms during summer months when the organism can reach high concentrations. Under natural conditions, fish will simply relocate where phytoplankton concentrations are lower.

Significant eelgrass beds can be found along the outside coast in the Malksope River, Ououkinsh River, McKay Cove and Clanninick Creek estuaries as well as in the tidal mudflats off Spring Island, McLean Island and Aktis Island.

The predominantly rocky shoreline of the Kyuquot Sound area supports a rich biota of attached marine algae or "seaweeds". Seaweeds absorb nutrients throughout the entire plant surface and attach to the surface of rocks using a "holdfast". The three main groups of seaweeds are browns, greens and reds, characterizing their differing abilities to absorb light. The green seaweeds typically occupy the upper intertidal area, while the brown seaweeds are found in the lower intertidal and the reds in the lower intertidal to subtidal waters. A group of brown seaweeds known as "kelp" are among the most conspicuous and abundant seaweeds in the Kyuquot Sound Plan Area. The main kelp species are the giant kelp (*Macrocystis integrifolia*) and bull kelp (*Nereocystis luetkeana*). Canopy forming kelp beds are generally located along exposed and semi-exposed coastlines, and in areas of upwelling or high current channels where nutrient levels are optimal and a rocky substrate is available. Major kelp beds are located throughout the Mission Group Islands, around McLean Island, throughout the Barrier Islands and Clear Passage Planning Units. Ecosystems associated with kelp forests have been shown to be up to three times more productive than kelp limited benthic communities, and provide important nursery habitats for sea otters, salmonids, herring, shellfish, and other invertebrate and finfish species.

Offshore Habitat

Figure 12. Southwest view over Bunsby Islands towards the offshore environment of Unit 19 (Graham Winterbottom photo).

Offshore habitat comprises 59.5% of the Plan Area. This habitat provides a critical migration corridor for whales, sea lions, anadromous salmonids and birds, as well as key habitat for such finfish species as halibut, ground fish and rockfish stocks. Offshore waters also support pelagic bird species as well as valued First Nation, commercial and sport fisheries. Maintenance of the existing pristine offshore habitat conditions is critical for continued production of migratory fish, bird, invertebrate and mammal species as well as the sustenance of inshore and inlet habitat values.

Shellfish and Invertebrates

The Plan Area contains a variety of shellfish and invertebrate species that are harvested for commercial, recreational and First Nations use. Intertidal clams are the most commonly harvested shellfish, including the native littleneck clam (*Protothaca staminea*) and introduced manila clam (*Tapes philipinarum*). These clam species occupy mixed substrates of gravel, sand, mud and shells in the intertidal zone of protected shore zone areas and estuaries. Clam beaches are spread throughout the Plan Area, which on an annual basis supply approximately 30% of the total west coast clam harvest. Both the Blue mussel (*Mytilus edulis*) and California mussel (*Mytilus californianus*) are abundant in the near shore habitats of the Plan Area, but are not harvested commercially at this time. The Pacific Oyster (*Crassostrea gigas*) is low in abundance within the Kyuquot Sound Plan Area.

The geoduck clam (*Panope abrupta*) is the largest bivalve found in British Columbia, occupying habitat from the lower intertidal zone to depths of over 100 meters. They are found both up the inlet as well as shoreline areas within the Area, beneath sand, silt, gravel and other soft substrates. Geoduck are harvested commercially within the Plan Area, with the fishery currently managed by DFO on an annual basis due to paralytic shellfish poisoning (PSP) closures that require more flexibility that the standard three year rotational fisheries in other areas of the west coast.

The predominant crab species is the Dungeness crab (*Cancer magister*). Adult crabs are found to depths of 100 meters in moderate to strong current areas with sandy bottoms. Like many other invertebrate species however, their larval life stage is spent as zooplankton. Upon metamorphosis to their adult form, adult Dungeness crab utilize estuaries as well as more exposed areas. They are usually fished by trap and are highly valued for commercial fishery as well as recreational and First Nation fishery purposes.

Several species of shrimp are found in Plan Area waters. They are harvested recreationally by traps, and in the commercial fishery by trawl gear. Shrimp are generally found in bottom habitats, although some species range throughout the water column. Prawns (*Pandalus hypsinotus*) are the largest and most commercially lucrative of the Pacific coast shrimp species. They are primarily bottom dwellers, and prefer sloped, rocky substrates between 75 and 150 meters. They are commercially fished using traps set from boats throughout the deeper inside waters of the Plan Area including Tahsish Inlet, Markale Passage, Pinnace Channel, Chamiss Bay and waters surrounding Moketas and Hohoae Island.

All three species of sea urchins- red (*Strongylocentrotus franciscanus*), green (*S. droebachiensis*) and purple (*S. purpuratus*) - are found in the Plan Area. Urchins can typically be found in shallow rocky areas with moderate wave exposure. Urchins graze extensively on algae, and can result in drastic reduction of kelp and other seaweed beds. In the Kyuquot area, there has been minimal commercial harvest for sea urchins, due to the low density of urchins resulting from predation by the sea otter population. Due to the low abundance of urchins, the kelp beds in the Kyuquot area flourish in abundance. Refer to the discussion of sea otters for more information on the otter-urchin-kelp relationship.

There are a number of sea cucumber species in the Kyuquot Sound area, although the giant red (California) sea cucumber (*Parasitichopus californicus*) is the largest and the only one commercially harvested. It is found from the intertidal zone to about 250 meters, on a variety of substrate and current conditions. Sea cucumbers are harvested by divers, usually during autumn and winter, and have been a historically important food resource to First Nations. Commercial harvesting in the Plan Area is presently limited by DFO due to lack of conservation information.

A number of beaches in the Plan Area are subject to seasonal and permanent closures for shellfish harvesting. The risk of marine biotoxin and pollution to public health within the Plan Area has necessitated the establishment of a monitoring program for shellfish as well as shellfish growing waters. Blooms of dinoflagellates belonging to the genus *Alexandrium* are responsible for paralytic shellfish poisoning (PSP). *Alexandrium spp.* occurs naturally in coastal waters of the Plan Area and present a potential health hazard to people who consume bivalve such as clams, oysters, scallops and mussels. Diatom blooms belonging to the genus *Pseudo-nipzchia* are the causative agent for amnesic shellfish poisoning (ASP). *Pseudo-nipzchia* spp also occurs naturally in coastal waters of the Plan Area. The Ka:'yu:'k't'h and Che:k'tles7et'h' First Nation Fisheries Crew regularly collects mussel stock samples from key locations for PSP and ASP testing, and also submits verification samples from commercial harvests. The Canadian Food Inspection Agency (CFIA) is responsible for shellfish monitoring while closures and warnings are administered by DFO. The Environmental Protection Branch of Environment Canada routinely monitors shellfish growing waters within the Plan Area for bacterial coliform contamination. Sanitary closures are in effect for Yaku Bay, Hankin cove, McKay Cove, Walters Cove, East Kashutl Inlet, Chamiss Bay and Cachalot Inlet within the Plan Area. Seasonal closures for sanitary concerns include Clanninick Cove and Kyuquot Sound in the vicinity of Tahsish Inlet, Kashutl Inlet and portions of Cachalot Inlet. Shellfish closures due to biotoxins are in effect for butter clams and scallops, with weekly PSP sampling in key locations by the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nation Fisheries Program. Information on closures may be found at http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/closures/area26/area_26.htm.

Salmon and Other Finfish

For several centuries, salmon have been of key importance to the people of Kyuquot Sound. Historically, salmon was the staple food of the First Nations, as well as a key trade item. Salmon abundance sparked a fishing and cannery boom in the Kyuquot Area, beginning in the late 1800s. It remains an important part of the daily diet of Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations and other local residents. Salmon species information is available at

http://www-comm.pac.dfo-mpo.gc.ca/publications/speciesbook/PacificFishStocks.pdf

There are at least 22 known anadromous fish bearing streams flowing into Kyuquot Sound. Chum and coho are the primary species produced in the Kyuquot Sound Plan Area with smaller stocks of chinook produced in the larger systems including the Tahsish River, Artlish River, Kaouk River and Kauwinch River. A small (~500) but significant run of sockeye is produced in Jansen Lake Creek that drains into Easy Inlet. Pink salmon have not returned to the Plan Area since 1976 and are considered extinct along with a number of pink stocks in Area 26.

The status of chinook stocks in the Kyuquot Plan Area is of great concern to the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nation Fisheries Program as chinook escapement has been declining steadily from historical levels in indicator streams. The Artlish River has a historical maximum of 3,500 chinook observed in the late 1950's and mid 1960's, with more recent escapement showing a significant decline to an average of

130 fish over the last 15 years. Furthermore, in at least 7 out of the last 15 years, total chinook escapement to the Artlish River has been less than 50 fish. Similarly, the overall outlook for the west coast of Vancouver Island chinook stocks is for poor returns due to very low ocean survival (<1%) of smolt to age 2 chinook, based on poor returns of 3 year old fish from indicator stocks. With such low numbers of chinook returning to spawn, there is a significant risk of stock extinction and data supports the need for stock enhancement and complete conservation of wild spawners. In general, coho stocks within the Plan Area were declining from historical levels during the 1980 to the mid 1990's, but stock recovery is evident from increased escapement and higher fry densities observed in key streams since 1998. The DFO outlook for the west coast of Vancouver Island coho returns is good, with above average (>10%) marine survival anticipated. Chum escapement to the Plan Area has been relatively stable with no conservation concern by the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nation Fisheries Program at this time. The DFO outlook for west coast of Vancouver Island chum is for a moderate to good survival trend, but due to medium to poor spawning in the 1999 brood year, average to below average returns are anticipated.

Although some stocks in the Plan Area have declined relative to historical escapement, salmon resources within the Plan Area combined with offshore migrants, continue to support limited commercial, sport and First Nations food fisheries. Since 1997, chinook and sockeye have been the target commercial species with an approximate average of 10,000 chinook and 5000 sockeye harvested annually. In 1996, coho was the target species with 85,000 harvested from Area 26 alone. Sport fishing effort in the Kyuquot Plan Area has been expanding rapidly, with chinook and halibut being the target species.

Ground fish typically inhabit shallow waters and marine shelfs throughout the Plan Area and include halibut, lingcod (*Ophiodon elongatus*), rockfish (*Sebastes sp*) and flatfish (sole). Ground fish species are important for commercial, recreational and First Nation food fisheries. Declining rockfish stocks have resulted in announcement of a DFO rockfish conservation strategy, which has closed the fishery in the Plan Area pending population recovery. The abundance of lingcod off the west coast of Vancouver Island remains at a moderate level with harvest levels remaining unchanged. In general, since 1989, ecosystem data for the west coast of Vancouver Island has indicated average to below average year classes of several ground fish species. Therefore, a conservative harvest is anticipated for future years.

Sea Otters

The sea otter (*Enhidra lutris*) is the only exclusively *marine* species of the Mustelidae Family. The river otter (*Lutra canadensis)* and mink (*Mustela vison)* are also resident to the Kyuquot area, but depend on terrestrial and freshwater habitat as well as marine areas for their sustenance. The Kyuquot area was the location of a successful sea otter recovery plan to reintroduce the species after its extinction in 1929. Once listed as an endangered species by the Canadian Wildlife Service, its status was recently changed to "threatened" in recognition of the success of reintroduction efforts. Between 1969 and 1972 a total of 89 sea otters were relocated from Alaska and released in Checleset Bay.

The re-introduction of sea otters to the Plan Area has resulted in significant changes in rocky near-shore benthic communities. The otters feed on sea urchins and other herbivorous invertebrates that typically graze on kelp beds and other seaweeds. Restoration of the sea otter population in the Plan Area has led to a reduction of grazing invertebrate prey species including sea urchin and the subsequent recovery of fleshy algae including kelp forests. Kelp forests have been shown to affect biological and physical processes in near shore ecosystems. Studies have shown that established kelp beds support fish populations by increasing water column complexity and providing suitable habitat for adult and larval fish. Kelp beds have also been shown to influence coastal geomorphic processes, which may affect recruitment and dispersal success of organisms associated with kelp beds. Studies indicate that mid-water fish species including perch and rockfish are 45 times more abundant in the Kyuquot area (with sea otters) than in Barkley Sound (without sea otters). Observed increases in the local and seasonal occurrence of feeding pilchards and spawning herring may be attributed to the restoration of kelp beds that historically characterized the rocky near shore community structure within the Kyuquot Coastal Plan Area.

Sea otters are non-migratory animals. Segregation within populations does occur and is typically based upon gender and sexual maturity, with a tendency for males and females to distribute themselves in different locations. Male sea otters will range over a larger area than females, and particularly females rearing pups.

A study in the Kyuquot area in 1993 estimated the growth rate of the local sea otter population at 19.2% per year from the original 89 animals re-introduced between 1969-1972. At the present time, sea otters in the Kyuquot area appear to be at carrying capacity for available habitat with recent counts estimating the population at 400-450 individuals. The benefits to near shore habitat in the Kyuquot area will be long felt with the established sea otter population and restored ecological equilibrium.

Other Marine Mammals

The Kyuquot Sound Plan Area supports habitat for other migrating and resident marine mammals. The blue listed Gray whale (*Eschrichtius robustus*) currently utilizes the Plan Area and adjacent offshore areas. Gray whales seasonally migrate through the Plan Area with a few individuals utilizing the area as residents. Each October, pregnant female Gray whales well into their 12-month gestation, begin their 9,600 km migration from the Chukchi and Bering Seas through the Plan Area, to their winter calving waters in Baja California Sur. Non-pregnant females, mature males, and juveniles similarly migrate over succeeding weeks. Grey whales make their return migration northward in two distinct pulses, with the first traveling between February to June and the second from March to July. The earliest migrants are typically pregnant females, adult males, and juveniles. Later migrants (including new mothers and calves that migrate more slowly) arrive within the Plan Area in late March and early April to feed on usual prey items, in addition to the seasonal herring spawn that coincides with their arrival. Year-round resident Gray whales can be observed in near shore waters of the southeastern portion of the Plan Area near Kapoose Creek.

Humpback whales (*Megaptera novaeangliae*) are another blue listed species that utilize the Kyuquot Sound Plan Area. In the North Pacific, Humpback whales typically migrate in spring, feeding en route to Alaskan waters where they spend the remainder of the summer. A second migration occurs southward during fall as they breed and overwinter in Hawaii. Migrating Humpback whales travel and feed in Canadian Pacific waters (including the Plan Area) twice a year. The North Pacific population is classified as a threatened species, estimated at 2,000 whales and representing 33% of the world population. Beginning as recently as 2001 a pair of resident Humpback whales have been observed year-round in the western portion of the Plan Area. Their primary prey items include krill and small schooling fish.

The Plan Area is also inhabited by the Minke whale (*Balaenoptera acutorostrata*), which is the smallest of the Family Balaenopteridae. This solitary species is generally believed to shift northward during the summer months from the Bering and Chukchi Seas and southward to the equator during the winter. Minke whales have been observed feeding year-round on small schooling fish throughout the Plan Area including estuaries, inlets, and fringing reef habitat.

Killer whales (*Orcinus orca*) are the largest member of the Family Delphinidae and a top predator of the coastal British Columbia waters. They can be found in the Kyuquot Sound Plan Area throughout the year. Killer whales can be separated into two genetically distinct forms known as "residents" and "transients." Amongst other defining characteristics, *resident* Killer whales feed primarily on schooling fish including salmon, whereas *transients* exploit marine mammals including Pinnipeds, sea otters and other whale species. Current population estimates of the BC resident Killer whale population including northern and southern residents is estimated at 286 individuals, representing a decrease of 6% since 1994. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) lists the northern resident Killer whale as a "*threatened*" species while the southern resident population is listed as and "*endangered*" species. Approximately 72% of the resident whale population (205 individuals) that occupy a northern range between Alaska and mid-Vancouver Island, have been observed in or adjacent to the Plan Area. Resident Killer whales exhibit a strong seasonal trend in distribution through the Plan Area that corresponds to the timing of salmon migrations in summer and fall.

Other members of the Family Delphinidae are frequently observed within the Plan Area and include Harbour porpoises (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), and the Pacific white-sided dolphin

(*Lagenorhynchus obliquidens*). Harbour porpoises are found in the shallower near shore waters where they frequent bays, harbors, estuaries and river mouths. Dall porpoises prefer deeper ocean waters where they feed primarily on squid, fish and crustaceans. The Pacific white-sided dolphin prefers fringing reef habitat where it feeds on small schooling fish.

The Plan Area provides habitat for pinnipeds, including Harbour seals (*Phoca vitulina*) and Stellar sea lions (*Eumetopias jubatus*). Sea lion haul out sites are located in the Plan Area within the Barrier Islands. Results from more than a decade of monitoring Stellar sea lion abundance suggest that the population has increased within the Plan Area. Harbour seals are known to utilize the Plan Area including sites located in the Mission Group, southern Barrier Islands and Warren Rocks. Remote areas exposed to ocean swells are favored for summer haul out locations while sheltered inlets and bays may be used in the winter. Harbour seals are commonly observed near coastal islands, fringing reef habitat, sandbars, inlets, estuaries, and river mouths, with abundance coinciding with spawning of herring and salmon.

Marine Reptiles

The leatherback turtle (*Dermochelys coriacea*) is the largest living turtle and the only marine reptile that occurs in the Plan Area. Leatherback turtles can measure up to 2.4 m in total length and weigh up to 725 kg. This turtle has the ability to maintain its body core temperature as much as 18°C above ambient, enabling it to stay active in temperate waters. Leatherback turtles are strong swimmers that spend most of their lives at sea, but return ashore to deposit eggs, which incubate for 53 – 74 days. They are migratory sea turtles that breed in tropical or subtropical waters and move to temperate waters in search of food. In the Kyuquot Coastal Plan Area, Pacific leatherback turtles are sighted between July and September when they are thought to feed on seasonally abundant jellyfish species including *Aurelia aurita*. The Pacific population was facing imminent extinction, but is now considered critically endangered by COSEWIC and the Leatherback Turtle Recovery Team of DFO.

Birds

Nearly 50% of the 5.7 million marine birds that breed in British Columbia nest on islands off the west coast of Vancouver Island. All thirteen species of marine birds are represented in the Kyuquot Coastal Plan Area including major seabird breeding colonies and feeding areas for resident and migratory birds. Migrating birds utilize the Kyuquot area for rest or feeding en route, usually in the fall and spring and often coinciding with annual events such as the Pacific herring (*Clupea harengus pallasi*) spawning season. For management purposes, marine bird species require continued access to sheltered waterways and food sources, most commonly in estuaries and marshes. It is widely accepted that estuaries and mudflats, particularly those that support significant beds of eelgrass (*Zostera spp.*) are amongst the most critical feeding habitats of marine and shoreline birds. Studies on the east coast of Vancouver Island have shown that development impacts to estuaries can significantly reduce marine bird productivity.

Longer-term and resident marine bird species typically have greater management requirements, such as protection of specific breeding areas or habitats, and controls over human use, activity or disturbance at critical times of the year. Breeding season in the Plan Area typically occurs between April and August. The loss of nesting, feeding and roosting habitats represent the greatest potential threat to marine and shoreline bird populations on the west coast of Vancouver Island. Certain fisheries within the Kyuquot Coastal Plan Area pose a potential risk to bird production. The Canadian Wildlife Service of Environment Canada has identified areas of interest, concern, and significant bird colonies in the Plan Area. These are shown in Table 2.

Table 2: Areas of Migratory and Resident Marine Bird Use in the Kyuquot Sound Plan Area.

Plan Unit	Location	Species	Identified Colonies
19	Solander Island and waters off Brooks Peninsula	Fork-tailed and Leach's Storm-Petrel, Glaucous-winged Gull, Pelagic Cormorant, Black Oystercatcher, Common Murre, Cassin's Auklets, Tufted and Horned Puffins, and Pigeon Guillemot, Albatross, Shearwaters, Cormorants, Loons	yes
8	Head of Ououkinsh Inlet	Dabbling Ducks, Loons, Grebes, Diving Ducks, Gulls, Alcids, Eagles, Swans	no
8	North shore and head of Malksope Inlet	Diving Ducks, Dabbling Ducks, Grebes, Mergansers, Swans	no
9, 11	Waters south of McLean Island; Clanninick and McKay Coves	Alcids, Gulls, Dabbling Ducks, Diving Ducks, Grebes	yes (9,11)
16, 17, 18	North end of Kashutl Inlet and Easy Inlet	Diving Ducks, Dabbling Ducks, Gulls, Swans	no
1, 14, 16	West side of Kashutl Inlet, Hankin Cove and Eelstow Passage	Diving Ducks, Dabbling Ducks, Gulls, Grebes, Swans	no
1	Head of Tahsish Inlet, mouth and up into Artlish River	Mergansers, Swans, Gulls, Shorebirds, Dabbling Ducks, Diving Ducks, Geese, Eagles	no
2	Mouth of Kaouk River; east end of Fair Harbour	Swans, Dabbling Ducks, Diving Ducks, Geese	no
5, 6, 13, 14, 15	Jansen and Chamiss Bays; waters of Guillod Point, between Hohoae and Union Islands, west of Whiteley Island, and along east side of Kyuquot Channel	Pelagic Cormorant, Alcids, Mergansers, Grebes,	yes (6,14)
4	Amai Inlet	Cormorants, Gulls, Grebes,	no
5	Cachalot Inlet	Dabbling Ducks, Gulls, Swans	no
6, 7	East side of Clear Passage; Nipple Rocks and Volcanic Islets	Glacous-winged Gull, Leach's Storm Petrel, Pelagic Cormorant, Tufted Puffin, Pigeon Guillemot, Black Oystercatcher, Dabbling Ducks	yes (6,7)
7	McQuarrie Islets	Pelagic Cormorant, Tufted Puffin, Pigeon Guillemot, Black Oystercatcher	yes
7	Diver Islet, Calm Rocks, Grassy and Clark Islands	Leach's Storm-Petrel, Pelagic Cormorant, Tufted Puffin and Pigeon Guillemot, Black Oystercatcher	yes
10,19	Favourite Islets, Amos Reefs, White Cliff Head, Moos Islet, Thornton Island, Mimulus Islets, Crag Rocks and Munsie Rocks	Leach's Storm-Petrel, Pelagic Cormorant, Tufted Puffin, Pigeon Guillemot, Black Oystercatcher	yes (10)

Red and Blue Listed Species

Several locations in the Plan Area are important habitat for red or blue-listed marine birds, mammals and plants. This classification is given by the provincial government to species that are considered by scientists as being at risk due to declining populations or habitats due to human activities. Red-listed species are endangered, and facing imminent risk of extirpation or extinction. Blue-listed species are at risk, but are not Extirpated, Endangered or Threatened. They are considered to be of special concern and are particularly sensitive or vulnerable to human activities or natural events. Legal designation as threatened or endangered under the provincial *Wildlife Act* may grant special protection for selected red and blue listed species; preventing development or activity on or near their residences, or critical habitat. Red and blue-listed marine species in the Plan Area are shown in Table 3.

Table 3: Red and Blue listed species in the Kyuquot Sound Plan Area.

Plan Unit	Common Name	Global Rank	Subnational Rank	BC Status
	Plants			
Unit 7	Hairy Goldfields	G4	S2S3	BLUE
Unit 7, 11	Fischer's Chickweed	G4	S2S3	BLUE
Unit 6	*Whidbeyella cartilaginea*	G1	S1	RED
Unit 9	*Laminaria longipes*	G5	S1	RED
Unit 7	*Laminaria sinclairii*	G4	S2	RED
	Marine Mammals			
Near & Offshore	Northern Right Whale	G1	SH	RED
Unit 14	Northern Sea Lion	G3	S2B,S3N	RED
Nearshore	Sea Otter	G4	S2	RED
Near & Offshore	Killer Whale (West Coast transient population)	G4G5T4Q	S2	RED
Near & Offshore	Killer Whale (Northeast Pacific offshore population)	G4G5TUQ	S3	BLUE
Near & Offshore	Gray Whale	G3G4	S2N	BLUE
Near & Offshore	Humpback Whale	G3	S1N	BLUE
	Birds & Reptiles			
Near & Offshore	Common Murre	G5	S2B,S4N	RED
Near & Offshore	Marbled Murrelet	G3G4	S2B,S4N	RED
Nearshore	Surf Scoter	G5	S3B,S4N	BLUE
Nearshore	Cassin's Auklet	G4	S2S3B,S4N	BLUE
Colonies in Unit 9, 10	Tufted Puffin	G5	S3B,S4N	BLUE
Near & Offshore	Leatherback Turtle	G2		RED

Note: CDC Conservation Status Rankings (S = Provincial, N = National, G = Global)

X	Presumed Extirpated or Extinct	Not located despite intensive searches and no expectation that it will be rediscovered.
H	Historical	Not located in the last 50 years, but some expectation that it may be rediscovered.
1	Critically Imperiled	Because of extreme rarity or some factor(s) making it especially susceptible to extirpation or extinction. Typically 5 or fewer existing occurrences, or very few remaining individuals.
2	Imperiled	Because of rarity or some factor(s) making it very susceptible to extirpation or extinction. Typically 6 to 20 existing occurrences or few remaining individuals.
3	Vulnerable	Because rare and local, found only in a restricted range (even if abundant at some locations), or because of some other factor(s) making it susceptible to extirpation or extinction. Typically 21 to 100 existing occurrences.
4	Apparently Secure	Because uncommon but not rare, and usually widespread in the province. Possible cause for long-term concern. Typically more than 100 existing occurrences.
5	Secure	Because common to very common, typically widespread and abundant, and not susceptible to extirpation or extinction under present conditions.
?	Unranked	Rank not yet assessed.
U	Unrankable	Due to current lack of available information.

Note. Conservation Status Rank Modifiers

E	Exotic – a species introduced by man to the province.
?	Inexact or uncertain due to limited information; qualifies the immediately preceding rank character.
Q	Taxonomic status is not clear or is in question.
T	Designates a rank associated with a subspecies or variety.
B	Designates a rank associated with breeding occurrences of mobile animals.
N	Designates a rank associated with non-breeding occurrences of mobile animals.

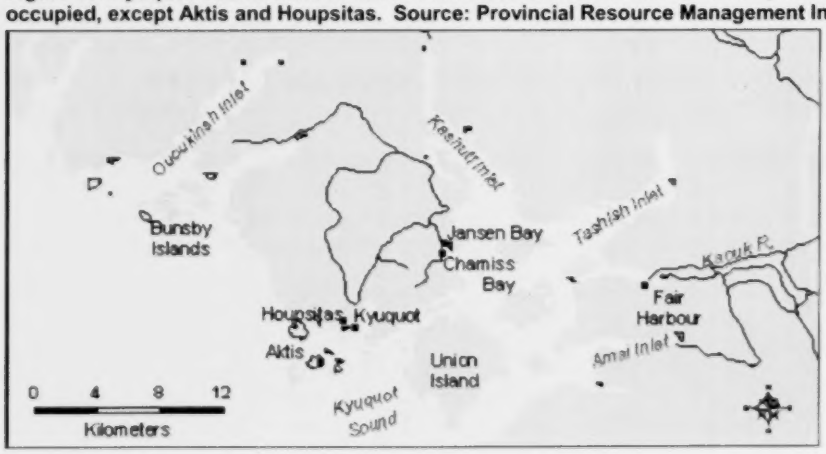
2.3. Social and Economic Profile

Community

Kyuquot Sound is part of Census Subdivision D of the Regional District of Comox-Strathcona. There are no incorporated municipal areas within the Kyuquot Plan Area. Census Subdivision D also contains all of the unorganized areas surrounding Zeballos, Tahsis and Gold River in Nootka Sound. The only road access to the Plan Area from the remainder of Vancouver Island is a forestry road that ends at Fair Harbour. Lack of quality road access has constrained population and economic growth in the area.

Figure 13 shows communities in the Plan Area. Almost all residents of the Plan Area (approximately 220 full-time residents in 2001) live around Walters Cove on Walters Island, on adjacent smaller islands, or on the mainland at Houpsitas Indian Reserve #6. The Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations have twenty-six designated reserves covering approximately 382 hectares. Less than half of the 445 registered band members live on reserve within the Kyuquot Sound area. Most Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations residents live at Houpsitas (approximately 160 people), with another 10 at nearby Aktis Island (Village Island Indian Reserve #1). There are also small non-native settlements at Chamiss Bay, Jansen Bay and Union Island based around former forestry or fishing camps. Population may double in summer with seasonal residents and visitors. Population in the area has declined since 1996 from about 280, likely due to declines in forestry and fisheries employment.

Figure 13: Kyuquot Sound Communities. Pink areas indicate Indian Reserves, most of which are not currently occupied, except Aktis and Houpsitas. Source: Provincial Resource Management Information System.



Prior to European contact the Ka:'yu:'k't'h and Che:k'tles7et'h' were separate First Nations. These northern Nuu-chah-nulth peoples each formed confederacies to share access to the resources of the inland (salmon) and coast (shellfish, mammals). Inland sites, none of which are presently occupied, provided sheltered locations

Note. Conservation Status Rank Modifiers

E	Exotic – a species introduced by man to the province.
?	Inexact or uncertain due to limited information; qualifies the immediately preceding rank character.
Q	Taxonomic status is not clear or is in question.
T	Designates a rank associated with a subspecies or variety.
B	Designates a rank associated with breeding occurrences of mobile animals.
N	Designates a rank associated with non-breeding occurrences of mobile animals.

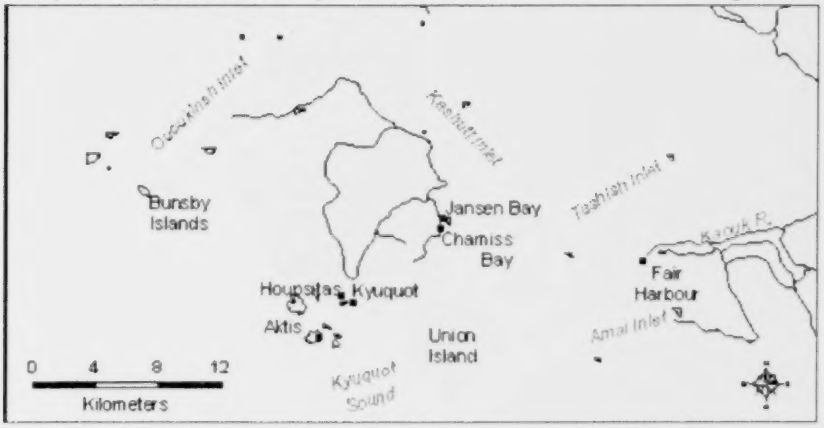
2.3. Social and Economic Profile

Community

Kyuquot Sound is part of Census Subdivision D of the Regional District of Comox-Strathcona. There are no incorporated municipal areas within the Kyuquot Plan Area. Census Subdivision D also contains all of the unorganized areas surrounding Zeballos, Tahsis and Gold River in Nootka Sound. The only road access to the Plan Area from the remainder of Vancouver Island is a forestry road that ends at Fair Harbour. Lack of quality road access has constrained population and economic growth in the area.

Figure 13 shows communities in the Plan Area. Almost all residents of the Plan Area (approximately 220 full-time residents in 2001) live around Walters Cove on Walters Island, on adjacent smaller islands, or on the mainland at Houpsitas Indian Reserve #6. The Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations have twenty-six designated reserves covering approximately 382 hectares. Less than half of the 445 registered band members live on reserve within the Kyuquot Sound area. Most Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations residents live at Houpsitas (approximately 160 people), with another 10 at nearby Aktis Island (Village Island Indian Reserve #1). There are also small non-native settlements at Chamiss Bay, Jansen Bay and Union Island based around former forestry or fishing camps. Population may double in summer with seasonal residents and visitors. Population in the area has declined since 1996 from about 280, likely due to declines in forestry and fisheries employment.

Figure 13: Kyuquot Sound Communities. Pink areas indicate Indian Reserves, most of which are not currently occupied, except Aktis and Houpsitas. Source: Provincial Resource Management Information System.



Prior to European contact the Ka:'yu:'k't'h and Che:k'tles7et'h' were separate First Nations. These northern Nuu-chah-nulth peoples each formed confederacies to share access to the resources of the inland (salmon) and coast (shellfish, mammals). Inland sites, none of which are presently occupied, provided sheltered locations

during winter, while coastal sites, including the present population centres, were preferred locations for fair-weather living.

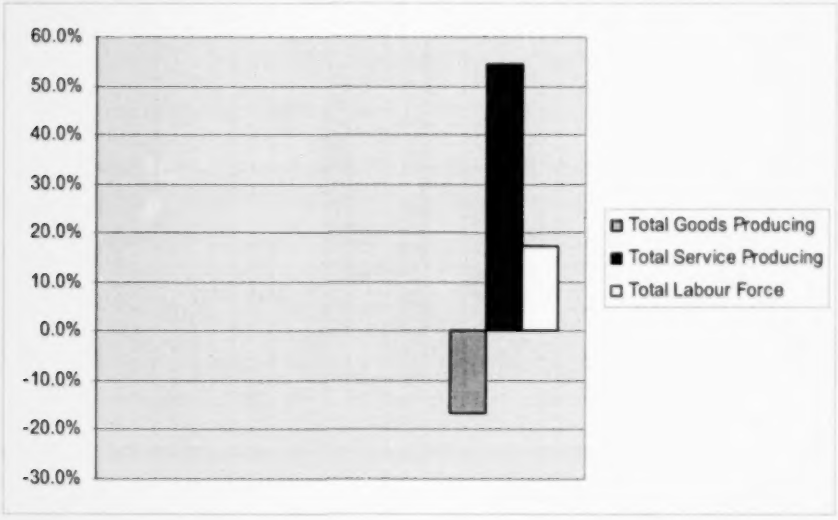
Prior to contact, the northern Nuu-chah-nulth wielded a unique economic power, as the source of the dentalia shells that served as 'money' for many of western North America's aboriginal peoples. Following European contact, Kyuquot enjoyed a brief prominence as a leading West Coast centre for fur seal hunting, and processing dogfish oil. Fishing, primarily for salmon using troll gear, along with canning, served as mainstays of the Kyuquot economy through the mid-20th century. During this period there was a small inflow of settlers, and a general consolidation of Ka:'yu:'k't'h and Che:k'tles7et'h' people from smaller communities at Aktis Island and Houpsitas reserves, as people sought work in the fishery. This consolidation culminated in the joining of the two First Nations for administrative purposes. Commercial fishing in Kyuquot declined sharply in the 1990s. Shellfish harvesting, traditionally limited to local food needs, is now increasing in economic importance to First Nations in the Plan Area. The Ka:'yu:'k't'h and Che:k'tles7et'h' are currently in the process of completing a Strategic Plan for their community to identify economic development and other community priorities.

Economic Structure and Trends

Data on the economy of the sparsely populated Kyuquot area are very limited. Labour force and economic dependency data are available for Census Subdivision D of the Comox Strathcona Regional District. This includes the rural areas surrounding the communities of Zeballos, Tahsis and Gold River, which in 2001, had a population of about 90. Therefore, the absolute numbers for CSD D are not applicable, but the percentage breakdowns are the best data available to provide an indication of the structure, and trends over time in the Kyuquot economy.

Total labour force of Census Subdivision D is estimated at about 135 in 1996. It is likely that the labour force in the area has declined since then. Goods producing industries, primarily forestry and fisheries, accounted for 37% of total labour force in 1996, down significantly from about 52% in 1991 (Figure 14). Service industries (dominated by public sector employment) accounted for about 63% of total labour force in 1996, an increase from 48% in 1991. Information on more recent trends in the Kyuquot economy indicate that these structural trends, i.e., an increase in the service sector despite a decline in the resource sector, have probably continued since 1996, as they have throughout BC.

Figure 14: Kyuquot Sound Area Labour Force Trends 1991-96



BC STATS has developed estimates of economic dependency for all regions, and a number of communities in BC, using 1996 Census data. These estimates show the relative importance of different sources of "basic" income, or income flowing into the area from the outside, which drive the local economy. These estimates provide a more comprehensive picture of the significance of various sources of livelihood because they identify supplier industry relationships, as well as tourism or non-employment sources of income.[2] Economic dependency estimates consider government as a "basic" industry, but because government spending and employment are determined by factors largely external to the local economy.

Economic dependency data for Census Subdivision D suggests that the Kyuquot Plan Area is much less diversified than most areas in BC.[3] Some of the other key findings from this data are as follows:

- The public sector was the single most important source of basic income, comprising 44% of total income in 1996. This reflects the relatively high dependency of First Nations on Band-related employment.
- Fishing (25%) and logging (19%) were the most important sources of private sector basic income in 1996. Declines in the AAC mean that dependency on these sectors has likely declined since 1996. Declines in salmon harvesting since 1996 have been offset, at least partially, by increases in non-salmon harvests and aquaculture employment.
- Tourism[4] is the third largest source of private sector basic income (5%) in the area. Most of this tourism activity is marine-related.
- Pension, investment income and transfer payments (including Canada Pensions and Old Age Security) comprise a negligible proportion of basic income in the area. The data likely underestimate income from these sources, for example transfer payments in First Nations communities. Retirement incomes are low in the area in part due to the isolation and lack of services compared to other parts of BC.

2.4. Economic Activities

Fishing and Shellfish Harvest

The harvest of marine fish and shellfish has been the economic focus in Kyuquot Sound for most of the area's history. These activities remain central to the livelihood and lifestyle of a significant portion of the community, particularly for First Nations, for whom food harvesting is an important element of household incomes not reflected in the labour force and economic dependency data.

The decline of west coast salmon stocks and the rationalization of the fishing industry (i.e. the federal buyback program) have led to the closure of local processing facilities and a significant decrease in the number of Kyuquot-based salmon fishing boats and workers. Today, there remain only three licensed and locally owned commercial trollers.

Always an important local food source, shellfish harvesting has recently grown in economic importance, and has been extended to historically underutilized species. The annual harvest of shellfish (including clams, geoduck, crab, octopus, prawn and urchins) is now several times the salmon harvest in Area 26 off Kyuquot Sound.[5] Shellfish harvesting is a seasonally important economic activity for a small number of businesses and a larger number of casual workers. Within DFO Statistical Area 26 between Tatchu Point and the Brooks Peninsula, annual revenue from the clam fishery has averaged $185,337 since 1996, with the majority of revenue generated going directly to clam harvesters who reside in the Kyuquot community. Since 1996, the geoduck fishery has been open for 5 out of 7 years in the Kyuquot area, and in those years generated an average annual revenue of approximately 1 million dollars. In 2002, geoduck harvesting generated the highest total revenue of all commercially harvested shellfish species. The majority of the economic benefit,

---

[2] The latest Ministry of Finance estimates are presented in *British Columbia Local Area Economic Dependencies and Impact Ratios-1996*, May, 1999, as well as in supplementary unpublished MFCR results provided for this report.

[3] Based on a review of the economic dependency data for CSD D and the "diversity indexes" estimated in *British Columbia Local Area Economic Dependencies and Impact Ratios – 1996*, op. cit.

[4] Note that tourism, as defined by BC STATS, includes business travel.

[5] Source: Fisheries and Oceans catch statistics, 2001.

however, accrues to non-local residents. Within Area 26, commercial crab fishery has been variable since 1996, with an average annual revenue of $44,611. The average annual value of the commercial prawn fishery since 1996 is approximately $101,000. The last sea cucumber harvest in the Plan Area took place in 1996 when the annual fishery generated $53,000.

Key clam and oyster collecting areas include much of Ououkinsh and Malksope inlets, a central area in the Mission Islands, parts of Union and Hohoae Islands, and small areas on Tahsish and Amai inlets. During very low spring tide cycles, many Ka:'yu:'k't'h and Che:k'tles7et'h' Band members participate in commercial clam harvests up the Malksope and other inlets. Crab are taken at the heads of several inlets and bays, while prawn are harvested from Kashutl, Tahsish and Amai inlets and Kyuquot Channel. Prawns are fished throughout the Sound.

The continental shelf off Kyuquot contains important groundfish harvest areas, which are harvested by vessels from outside the local area. The harvests of sablefish, sole, halibut, lingcod, dogfish and turbot have increased over time as salmon harvests have declined.

Finfish Aquaculture

One company operates four salmon aquaculture operations in Kyuquot Sound. Marine Harvest Canada operates farms at Whitely Island, the south point of Hohoae Island, Amai Inlet and Pinnace Channel. The operations run year round, employing an estimated 25-50 workers raising Chinook salmon. Approximately 10% of the jobs on these sites are held by area First Nations. Most workers are not permanent residents of the Plan Area. Fish farms also provide some indirect employment in firms servicing the aquaculture operations. The product is shipped by forestry road from Fair Harbour to processing facilities in Campbell River.

In late 2002, LWBC made a tenure offer to Marine Harvest for a fifth aquaculture operation on the north side of Hohoae Island. As of March, 2003 this proposed project is being reviewed under the Canadian Environmental Assessment Act. Several other finfish proposals, including an upland hatchery on Union Island, are also being planned for the area.

There are local concerns about the potential conflicts associated with finfish aquaculture, with respect to resources such as shellfish beds, predators, and wild salmon stocks. The Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council supports finfish aquaculture within its traditional territory. Some concerns have been expressed within the First Nations community because of their reliance on marine resources for their livelihood and food. The finfish aquaculture industry is now actively engaged with local First Nations groups regarding employment benefits, supplier arrangements and partnerships.

Shellfish Aquaculture

There is currently one scallop aquaculture tenure located on the north side of Surprise Island. In general, shellfish aquaculture is more labour intensive, requires less capital and technological sophistication and generates more benefits for local participants.

As an economic development initiative, the Province recently established a memorandum of understanding with the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations regarding shellfish aquaculture in the Plan Area. Under that agreement, ten sites have been reserved in favour of the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations for a period of ten years. To date, two tenures have been issued while a third has been offered and accepted. The First Nations have been working to develop management plans and tenure applications, and applications for several of these sites have now been submitted. Shellfish aquaculture has been identified as a high interest activity in the Ka:'yu:'k't'h and Che:k'tles7et'h' draft Strategic Plan.

Forestry

The Kyuquot area lies within the Strathcona Timber Supply Area (TSA). Three major forest licensees hold tenure over most of the forest lands around Kyuquot. International Forest Products Ltd. (Interfor) is the most active, with up to 40-50 seasonal employees at its Chamiss Bay logging camp, and an additional seasonal

tree-planting staff of about 30. Western Forest Products Ltd. and TimberWest Forest Ltd. also hold tenures to harvest in the area, but do not maintain permanent facilities. Most of these employees are non-local residents.

The provision of support services to the forest industry such as log booming, transportation and contracting, provides local employment for an estimated 10 to 20 workers. A local fisheries crew of 4-5 people have had seasonal employment for the last six summers, working on watershed restoration projects throughout the Sound. Similarly, there is one locally-owned silviculture operation that employs residents in thinning and creek cleaning activities.

Timber harvested by the licensees is transported elsewhere for processing. There are no mills in the Plan Area, although several family-owned and operated small-scale facilities do operate occasionally to produce specialty products, shakes/ shingles and local construction materials. BC Timber Sales, formerly the Ministry of Forests' Small Business Program, also operates in the Plan Area.

Forest harvesting became increasingly extensive in the second half of the last century, at first based in semi-permanent residential camps, and later moving to camps with short-term crews. Market factors and depletion of readily available timber are contributing to the reduction in forestry activity in the Plan Area. The Annual Allowable Cut (AAC) for the Strathcona TSA was reduced by 16% in 1996, and by a further 10% in January, 2000. Future TSA harvest reductions are projected and redistribution from the Kyuquot supply block to other supply blocks in the TSA will be required to minimize harvest reductions for the TSA as a whole. Therefore, forestry-related employment in the Plan Area is expected to decline over the foreseeable future. The trend to larger timber sales by the MOF, on which small, independent loggers find it difficult to compete, has exacerbated this situation.[6]

Tourism and Recreation

Northern Vancouver Island is still relatively remote from the mainstream of British Columbia's tourism industry, and the Plan Area is even more isolated due to limited road access. This isolation inhibits some activities and businesses but creates other opportunities benefiting from wilderness attributes. The tourism sector in the Plan Area still lags behind forestry in terms of employment and economic contribution. However, over the last decade the range of tourism activities and products in the Plan Area has broadened, and the economic importance of the sector has increased.

The Plan Area hosts sport fishing, sailing and cruising, diving, and sea kayaking. These activities are enjoyed by both independent recreationists and by more traditional tourists who patronize businesses for guiding, accommodation and transportation. Most tourism and recreation activity in the Plan Area is very seasonal, taking place between May and October.

Four sport fishing lodges in the Plan Area account for approximately 1900 visitor days per year. The Motor Vessel Uchuck III provides weekly cargo service year round from Gold River and overnights in Kyuquot. While primarily a cargo service for remote communities, fish farms and logging camps, the Uchuck is also popular with tourists. Accommodation for passengers on the Uchuck III accounts for approximately 650 visitor-nights annually. One sea kayaking and base camp operation accounts for approximately 550 person-days. There is substantial additional recreational tourism activity by independent sport fishers, kayakers, and coastal cruisers.

Whether public or commercial, recreationists are attracted to excellent fishing and wildlife viewing opportunities (the re-established sea otter population is a significant international attraction), quaint historic communities, remote and rugged coastline, and multiple protected wilderness areas, parks and ecological reserves. Since most recreational tourists are self-sufficient, they tend to bring supplies and equipment from home, which limits local benefits, but contributes to the provincial economy as a whole. Recreationists do contribute to the local economy by hiring water taxi services (four local water taxi services specialize in shuttling sea kayakers and camping groups), re-stocking supplies at the general store, or dining at the local

---

[6] *Strathcona TSA Rationale for AAC Determination Effective January 1, 2000*, Ministry of Forests. Since most of the logging and contracting jobs, and virtually all of the processing employment generated by Plan Area timber accrues to non-residents of the area, the impacts of AAC reductions have primarily affected non-local economies.

restaurant or a night in the area's three B&B's. In 1999, marine fuel facilities were closed down, so all local and non-local vessels must refuel elsewhere. However, there are plans for a new wharf and fuel station at Fair Harbour.

The Council of BC Yacht Clubs is promoting the establishment of boat havens along the BC Coast. Boat havens provide safe harbours of refuge and destination waypoints. The Council has identified two boat havens in the Plan Area: Dixie Cove and Volcanic Cove. The former is protected as part of a Provincial Park, and the latter is the subject of a *Land Act* notation of interest. In addition, the Plan Area provides a number of safe anchorage sites for recreational and commercial vessels.

The Plan Area contains five established Ministry of Forests Recreation Sites, located at Fair Harbour, Spring Island, Amai Inlet, Trail Creek and British Creek. These sites and the adjacent water areas are used for camping and access by public and commercial recreationists. In addition, there are a number of "dispersed use" areas within the Kyuquot Plan Area. The Ministry of Forests recently announced its intention to maintain recreation sites in the province through partnerships with interested groups and organizations. At time of printing, management arrangements for established recreation sites had not been determined.

It is expected that growth in the tourism sector will continue in the Plan Area, as evidenced by the plans to build a marina and other commercial facilities in Fair Harbour. Protection of wildlife and wilderness settings in the newly established parks on Brooks Peninsula and Tahsish-Kwois will also likely attract visitors to the area. Tourism and commercial recreation have been identified as high interest activities in the Ka:'yu:'k't'h and Che:k'tles7et'h' draft Strategic Plan.

Mining

The geology of Kyuquot includes areas of potential mineralization similar to the gold-bearing areas near Zeballos, which has prompted extensive historical exploration. Mineral tenure records show several hundred claims have been staked over the years, although only a few dozen are currently in good standing. At Monteith Bay, a deposit of high-quality silica (pyrophyllite and chalky geyserite) is mined periodically, perhaps twice a year by a small crew, for use in construction materials such as cement.

Due to the hidden nature of the resource and uncertainty around key determining factors such as world prices, future activity in this sector is particularly difficult to predict. However, if historical trends provide any indication, and subject to unexpected discoveries, exploration and mining activity is not likely to increase significantly in the Plan Area.

Utilities

Currently, the Plan Area is not interconnected with the main provincial grid and generates electricity with diesel generators. Synex Energy Resources of Vancouver has received a certificate of public convenience and necessity by the British Columbia Utilities Commission for the construction of a power line between Oclucje (near Zeballos) and Kyuquot, and operation of a power utility in Kyuquot. Construction is scheduled for completion in 2003. Interconnection of the Kyuquot area to the main power grid will reduce costs of energy and spending leakages from the economy. It will also likely reduce a significant investment impediment for the area.

Marine Transportation

The three federal wharf facilities are the key components of marine transportation in Kyuquot Sound, providing public and commercial access. Transport Canada manages the wharves at Fair Harbour and Walters Island, with Fisheries and Oceans Canada operating the facility at Houpsitas.

Since there is limited road access, marine transportation is essential to many of the economic activities in the Plan Area. Commercial towboats move barges and log booms through much of the Plan Area. Towboats, the commercial fishing fleet and recreational boaters require safe anchorage in bays and inlets protected from storms and unfavourable tides. Some tenures for log handling and storage provide similar opportunities.

Oil and Gas

The potential for offshore hydrocarbon reserves within the Plan Area is unknown. More generally however, the BC offshore sedimentary basins are estimated to contain undiscovered hydrocarbon reserves of 9.8 billion barrels of oil and 43 trillion cubic feet of gas. However, it is too early to predict where commercial quantities of oil and gas may be discovered and which areas may be required for development and production.

Before any offshore development can proceed, an overall management regime, including regulatory, royalty, and environmental requirements will be required. The Province will also have to work with coastal communities and First Nations to ensure that benefits accrue to the areas where activity occurs.

The Kyuquot Sound Coastal Plan focuses on the appropriate uses of Crown foreshore and nearshore areas, and does not consider the future development of offshore oil and gas resources.

2.5. Recent and Anticipated Economic Trends

Population and labour force in the Plan Area has likely remained roughly constant from 2001 to the present due to a slight increase in First Nations and a decrease in non-First Nations residents who have pursued economic opportunities elsewhere. Population growth is likely to be very limited in the foreseeable future and would depend greatly on growth in the local economy.

Marine-related tourism and aquaculture (both finfish and shellfish) have been, and will likely continue to be the growth sectors in the local economy. Market factors, AAC reductions and the shifting of harvesting out of the Kyuquot supply block to other areas within the Strathcona TSA, mean that forestry employment in the Plan Area will likely continue to decline. Fisheries activity could be stabilized with the completion of salmon buyback and increased non-salmon harvests.

The proposed connection of the Plan Area to the provincial electricity grid will reduce a significant investment impediment for the area, but the lack of an improved road access to the Island Highway may limit future economic and population growth.

Economic growth in the Plan Area will also be limited by the fact that many of the jobs in the resource sectors, including tourism, are held by non-residents and are seasonal in nature. Also, most of the resources harvested in the Plan Area (e.g., fisheries, timber and aquaculture) are processed outside the area. Without changes in resource tenure and hiring and supplier policies of developers, much of the economic benefits of resource development in the Plan Area will continue to accrue to other areas of BC.

A treaty settlement could be an important stimulus to economic development in the Plan Area. Greater control over resources and the financial component of a treaty settlement could result in significantly higher benefits for all local residents.

3. Plan Framework and Direction

3.1. Use of the Plan

The Kyuquot Sound Coastal Plan is designed to assist prospective land tenure applicants, First Nations, local government, LWBC and other government agencies in dealing with applications for the use of provincial Crown foreshore and nearshore tenures. The Plan may also provide a useful tool to assist in the marketing of community and Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations economic development.

Use of the Plan should benefit First Nations, local government, LWBC and other government agencies by screening or filtering potential Crown land applications which may have limited likelihood of success. In this way, work loads of these agencies and organizations can be expected to be lowered in both volume and level of complication or controversy.

Although the Plan has been developed with the assistance and support of the Regional District of Comox Strathcona, the Plan is not intended to replace the need for referrals to local government. Similarly, the Plan is not intended to replace provincial or federal agency referrals or to absolve LWBC from addressing its legal obligations to consult with the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations on land tenure applications.

With the exception of other compelling constraints or LWBC application requirements, applications for uses that are consistent with the Plan should be accepted and evaluated by LWBC. The Plan is not intended to address operational or production requirements associated with finfish, shellfish or marine plant aquaculture. These aspects of aquaculture are addressed in aquaculture management plans associated with aquaculture tenures.

Future development of offshore oil and gas resources was not considered in developing the Plan. This Plan and its recommendations will not affect or prejudice any offshore oil and gas development, including any land requirements for offshore oil and gas activities.

3.2. Strategic Direction: The Vancouver Island Land Use Plan

The recommendations of the Kyuquot Sound Coastal Plan are intended to be consistent with the general direction provided by the goals, objectives and strategies outlined in the Vancouver Island Land Use Plan (VILUP). This Plan provides detailed planning recommendations consistent with the strategic direction of the VILUP.

The Plan Area abuts four of the Resource Management Zones (RMZs) identified by the VILUP. Those zones are summarized below in Figure 5 and Table 2. Appendix 3 presents the detailed management provisions associated with each of these VILUP zones.

Figure 15: VILUP Resource Management Zones

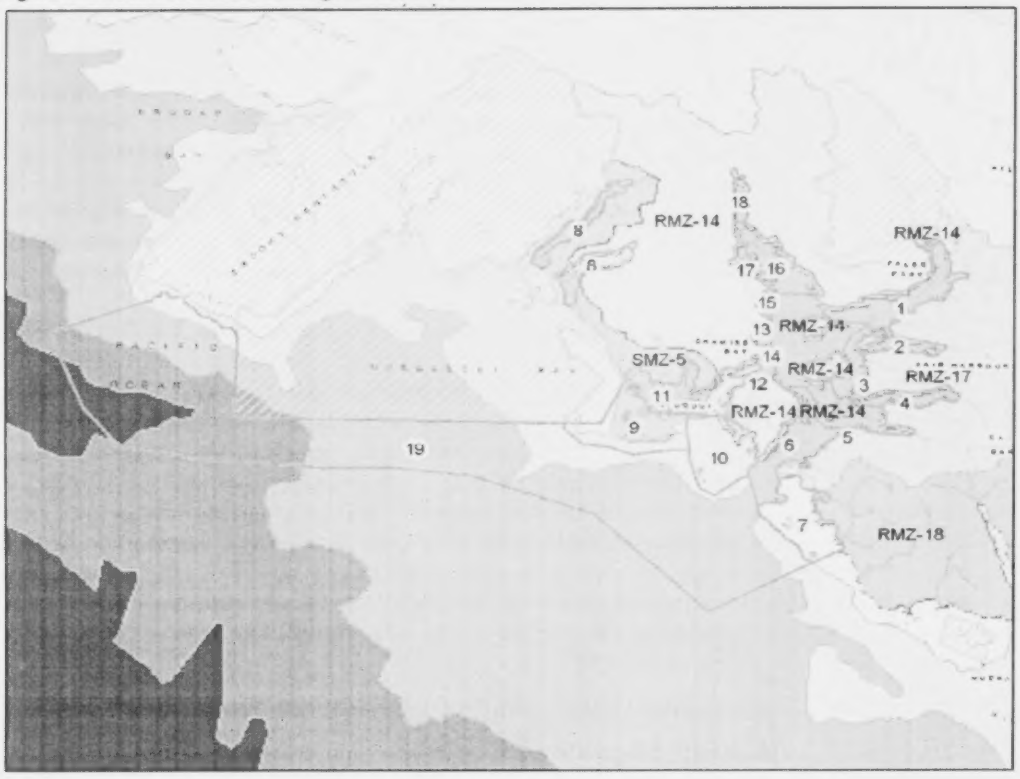


Table 2: Vancouver Island Land Use Plan Resource Management Zones

VILUP RMZ	Location:	Overall Management Guidance
SMZ-5: South Brooks-Bunsby	Extending from Brooks-Nasparti protected area southeast along coast to Kyuquot	Special Management Zone for maintenance/recovery of scenic, recreation and tourism values, as well as cultural heritage values; maintenance of sea otter and bald eagle habitat
RMZ-14: Kashutl	Coastal zone along Kyuquot Sound, between South Brooks-Bunsby SMZ and Tahsish-Kwois protected area; includes Union and other islands in Kyuquot Sound	General Management Zone for integrated resource management, with emphasis on integration of timber values with scenic values along coast, as well as cultural heritage values
RMZ-17: Artlish-Kaouk	Artlish and Kaouk River watersheds	General Management Zone with significant fish, wildlife, biodiversity values, as well as high amounts of mature timber; integration of visual and recreation values
RMZ-18: Eliza	Eliza and Espinosa peninsulas up to Zeballos Inlet, as well as Zeballos; Tahsis peninsula up to Little Zeballos drainage	Enhanced Forestry Zone for enhanced timber harvesting in suitable areas (e.g. areas which are not visually sensitive), as well as enhanced silviculture on most productive sites; emphasis on scenic values along coast, and integration of associated recreation/tourism opportunities; objectives for biodiversity are to be integrated at the basic stewardship level; adaptive road engineering/deactivation efforts are indicated to maintain terrain and watershed integrity

3.3. Planning Units and Unit Data

The area covered by this Plan has been divided into 19 planning units. The planning unit boundaries are largely based on marine ecosystem classification with some modification to reflect human use patterns and specific biological features. The exception is Unit 19, an offshore component which is included in the Plan to reflect the boundary recommended by the VILUP, as well as its importance to Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations. Inclusion may also accommodate future oceans planning work by DFO and any associated boards, such as the current West Coast Vancouver Island Aquatic Management Board (WCVIAMB). Section 3.8 of this Plan presents descriptions and management recommendations for each of these units. For each planning unit, a description and map is provided of resource attributes, existing tenured uses, non-tenured activities, status of adjacent upland, and resource capabilities for selected uses. Figure 11 provides the legend for planning unit maps. **Although some upland features are shown, the Plan does not prescribe uses for these upland areas.**

Planning unit descriptions and attributes reflect data drawn from two sources. Established government databases are the source of most of the data in this Plan. Spatial information used in this Plan is available on the Minstry website at http://srmwww.gov.bc.ca/dss/coastal/planning/kyuquot.htm. Such data has been collected and assembled according to standardized methods determined by the Province's Resource Inventory Committee. This approach helps to ensure the quality and consistency of that data.

An equally important source of data is local knowledge gained through stakeholder consultation for this Plan. Although local knowledge provides insight into particular attributes of an area, it cannot readily be added to established government databases without being gathered and validated according to provincial data inventory standards.

Planning unit attributes in Section 3.8 that are based on local knowledge are identified with an asterisk (*). While this data is useful and important to the Plan, users of this Plan should understand that such information has not been validated by government or included in "official" government databases.

Planning unit descriptions and maps in Section 3.8 also contain data regarding capability of areas to support aquaculture. These capability assessments provide reconnaissance-level analysis of physical conditions for finfish aquaculture, beach culture of oysters and manila clams, and deepwater culture of scallops and oysters. Scallop aquaculture capability is used in this Plan as a surrogate for marine plant aquaculture capability (primarily kelp).

Figure 11: Legend for Planning Unit Maps

3.4. Uses and Activities

This Plan addresses a range of uses and activities that occur in foreshore and nearshore areas. It applies specialized definitions of the terms *use* and *activity*. *Use* refers to undertakings that are subject to provisions of the provincial *Land Act* requiring that they be tenured. Table 3 lists and describes uses that are addressed by this Plan. *Activities* are undertakings that are not subject to provincial tenure.

Table 3: Foreshore and Nearshore Uses

Use	Description
Shellfish Beach Aquaculture	Growing and harvesting of shellfish on tenured beach or intertidal locations, usually in the substrate. Associated facilities.
Shellfish Deep Water Aquaculture	Growing and harvesting of shellfish and other invertebrates in deep water or subtidal locations, usually on suspended trays, lines or other structures anchored to the sea bed. Associated facilities.
Marine Plant Aquaculture	Growing and harvesting of marine plants such as kelp on tenured sites for commercial purposes. Associated facilities.
Finfish Aquaculture	Farming for salmon and other finfish species in deep water net cages or other containment structures, anchored to the sea bed. Associated storage and accommodation facilities.
Log Handling, Storage & Infrastructure	Log dumps, log sorts, heli-log drop sites. Floating camps and other related facilities & infrastructure.
Private Docks	Docks, wharves, boat houses, and mooring buoys intended solely for private use.
Commercial and Industrial Docks	Docks, wharves, piers, breakwaters, and related structures associated with commercial or industrial activities. These facilities provide limited or no public access.
Public Docks	Docks, wharves, piers, breakwaters that provide for public access and use.
Float Homes	Individual float homes, and floating communities.
Marine Telecommunications & Utilities	Underwater hydro, telephone, utility rights-of-way. Floating facilities associated with wave energy generating stations and other utility uses.
Commercial Recreation Guiding	Extensive commercial recreation guiding operations, including kayaking, diving, wildlife viewing, and other ecotourism. Guiding is a temporary and transient use.
Floating Lodges and Base Camps	Continuous seasonal occupation of foreshore areas for haul-out of boats, camping and related activities, and access to camping on adjacent upland. Continuous seasonal moorage of floating camps or mother-ships. Camps or structures on pilings or floats, including docks associated with Floating Lodges and Base Camps.
Conservation	Use for conservation of cultural and recreational resources, marine ecosystem or fish habitat, including areas required for scientific and research purposes. Existing regional and local parks, *Land Act* reserves or notations of interest for conservation; and existing provincial parks, ecological reserves, conservation or protection areas.

Table 4 presents a generalized list of activities known or anticipated to occur in the Plan Area. This Plan makes recommendations regarding uses, but not activities. Activities are listed in this Plan to ensure that the range of undertakings (uses and activities) are considered when management decisions are made.

Table 4: Foreshore and Nearshore Activities

Activity	Description
First Nations	Traditional and existing uses including sustenance, spiritual, ceremonial; heritage sites & routes. *NOTE: The Plan recommendations on acceptability of a tenure application do not alter or remove provincial agency obligations for First Nations consultation if specific development applications are accepted for processing.*
Public (Non-Commercial) Recreation	Wildlife viewing; swimming; kayak staging & landing areas; surfing; scuba diving; birding. Sport fishing (angling; fly-fishing); public harvesting of shellfish. Power boat, sailboat, canoe and kayak routes.
Commercial Fisheries	Fishing by vessel using a variety of gear-types in accordance with federal regulations, licenses and openings. Includes commercial clam and shellfish harvesting, and commercial crab, prawn and shrimp harvesting under license.
Marine Transportation	Tow, barge, and freighter routes.

3.5. Use and Activity Recommendations

LWBC is the provincial agency responsible for administering *Land Act* and *Water Act* tenures. LWBC uses a variety of tenure types and tenure programs to manage the uses listed in Table 3. Figure 11 and planning unit maps identify existing tenures according to tenure program. Users of this Plan should be aware that tenure programs do not exactly correspond with the uses listed in Table 3. This is because some tenure programs may apply to a very broad range of undertakings (i.e. Commercial A), and because some uses may require more that one type of tenure.

This Plan makes recommendations regarding the acceptability of the uses listed in Table 3 for each planning unit. Acceptability of uses is addressed according to the following scheme.

- ✓ **Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
- **O** **Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan (subject to variation process).
- **X** **Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation (subject to variation process).

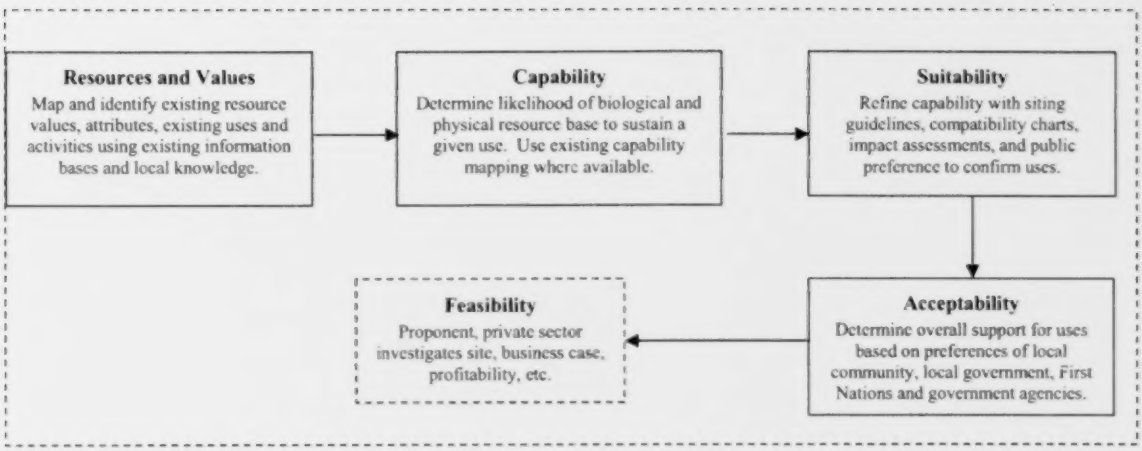
The Plan provides a variation process for uses marked as **X** or **O** under certain circumstances and conditions (in Section 5.8).

In addition, the presence or absence of activities is identified in each unit as follows:

P	The non-tenured activity is present and ongoing in the Planning Unit
A	The non-tenured activity is absent from the Planning Unit

3.6. Determination of Acceptable Uses

The determination of acceptable uses is based on decision rules that consider existing use commitments, compatibility, and agency siting and best management practices. A list of basic decision rules and other decision assistance tools are provided in Appendix 4. This initial determination was refined to reflect review and discussion with the public, local planning advisory committee members, local government, First Nations and stakeholder groups. The process is identified conceptually in the following diagram:


Resources and Values
Map and identify existing resource values, attributes, existing uses and activities using existing information bases and local knowledge.
Capability
Determine likelihood of biological and physical resource base to sustain a given use. Use existing capability mapping where available.
Suitability
Refine capability with siting guidelines, compatibility charts, impact assessments, and public preference to confirm uses.
Acceptability
Determine overall support for uses based on preferences of local community, local government, First Nations and government agencies.
Feasibility
Proponent, private sector investigates site, business case, profitability, etc.

3.7. Management Provisions

For each unit, management provisions are identified to provide guidance on addressing concerns, conflicts, competition, information needs and capacity issues within the planning unit.

The final determination of unit recommendations has been influenced by knowledge, information and advice from government agencies, First Nations, area residents, and other interested parties.

3.8. Management Emphasis

Based on these factors, each planning unit has been assigned a "management emphasis" category. These categories represent a characteristic "flavour" of existing values and uses, level of development, and opportunities, and each category reflects a difference in the management conditions that should be placed on approved uses and activities within planning units. An emphasis category is not intended as a conventional land use designation or zoning category, since existing and recommended uses and activities will not necessarily be the same for all units assigned the same management emphasis.

Conservation Emphasis

Conservation Emphasis units are predominated by or adjacent to significant marine ecological, recreational or cultural features and values, including existing terrestrial or marine protection areas (or proposed areas) and areas withdrawn or reserved from disposition for conservation and recreation values.

Tenured uses and activities should be compatible with and sensitive to conservation and recreation values in the unit or on adjacent upland.

Preferred future uses are those that would be compatible with the conservation, recreation and cultural values and features on which the unit emphasis is based.

Management mechanisms are intended to direct tenure applications to areas compatible with identified values in these units. The mechanisms include: compatible or complementary uses only; special management and siting criteria; further investigation for marine protection designation; and reserves or notations of interest.

Community Emphasis

Community emphasis units are predominated by a concentration of multiple uses and activities that are associated with adjacent floating or upland settlement. Typically this includes combinations of commercial, industrial, community and public institutional uses, private moorage and rural development.

A variety of uses is maintained and/or encouraged in these areas, and most uses should be compatible.

Non-commercial activities and tenured uses should be undertaken with the expectation that they will not interfere with or impede existing uses and activities.

Management mechanisms applied in these units include: special management provisions and codes of practice to minimize conflict; reserving of specific opportunity areas for future tenure; and provisions to minimize impact of development or preclude development in specific areas.

General Marine Emphasis

General Marine Emphasis units are characterized by limited access, limited uses and / or development potential, with ongoing marine transportation and navigation activities and commercial and recreational fishery activities.

Units include discrete provincially tenured uses such as log handling facilities. Preferred uses are those that would be compatible with ongoing activities and existing uses.

Management mechanisms applied in these units include: special management provisions to maintain fisheries access and navigation requirements; use of standard codes of practice and tenure provisions; and provisions to minimize impact of development or preclude development in specific areas.

3.9. Planning Unit Direction

Unit 1 Tahsish Inlet

Marine Area	26.5 sq km	**Shoreline**	42.8 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Low		

Description:

This unit is a large inlet with low exposure. The unit supports several important salmon runs, and contains two major estuaries. The unit also contains alternate road access to the Plan Area.

Attributes:

- Eelgrass at mouth of Artlish River.
- Strong outflow winds.*
- 10 known eagle nesting sites.
- Salmon migration route for Tahsish, Artlish, and Kaouk rivers.*
- Anadromous fish streams: Artlish, Tahsish, unnamed stream (north end of inlet), Yaku Bay.
- Clam beaches at Yaku Bay and mouth of Artlish River.
- Area between Artlish and Tahsish estuaries and north shore of the inlet west of Yaku Bay are used by migratory birds (including swans, geese, dabbling ducks, mergansers) and are CWS areas of interest.
- Estuaries at Tahsish and Artlish river mouths.
- Adjacent upland on Moketas Island, and northwest shore of this unit, excluding Tahsish Kwois Provincial Park, are part of VILUP RMZ 14. Balance of adjacent non-park upland is part of VILUP RMZ 17.
- Finfish aquaculture opportunity: Not Recommended in upper inlet; remainder of unit rated as Good to Moderate (OA1).
- Deepwater Oyster aquaculture capability: rated Good and Medium throughout.
- Deepwater Scallop and Marine Plant aquaculture capability: Not Rated in lower inlet, rated Good in upper inlet, Yaku Bay, and Eelstow Passage.
- Beach aquaculture capability: Northern tip of Tahsish Inlet, east of the estuary, and western tip of Yaku Bay rated as Good capability for beach culture of clam and oyster. Mouth of Artlish River, 1km northeast of Fair Harbour entrance, also rated Good capability for beach culture of clams.
- Ka:'yu:'k't'h First Nation has identified an interest in tourism development in and adjacent to Tahsish Kwois Provincial Park.

Current Uses and Activities:

- Indian Reserves north of Tahsish Estuary, and at mouth of Artlish River.
- *Land Act* shellfish reserve for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations at Yaku Bay.
- First Nations Activities: clam harvest, commercial and sustenance shellfish beaches, waterfowl hunting area *
- Nine tenures for log handling and storage; helicopter log drops along north shore of inlet; log booming ground at Artlish River.
- Anchorage at Yaku Bay.

* Local knowledge

- Unit is subject to periodic closure to sport fishing.
- Float for boat and barge tie-up at Yaku Bay (not tenured).
- Commercial dock and barge grid at mouth of Artlish Estuary provide road access to the sound. This facility provides alternate access; Fair Harbour receives more traffic.
- Unit is adjacent to Tahsish Kwois Provincial Park and Tahsish Estuary Ecological Reserve; unit provides primary water access to the park.
- Unit is important to the commercial prawn fishery.*
- Clam harvest.*

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	O	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
O	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit
A	The non-tenured activity is absent from the Planning Unit

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to maintain its current range of uses, and to support potential tourism development at the upper end of the unit.
- Public docks should be restricted to the Artlish and adjacent Indian Reserves.
- Commercial and industrial docks should be restricted to current locations.
- Marine telecommunications and utilities uses require submission of supporting biophysical information.
- Off-bottom aquaculture in Yaku Bay should not interfere with log booming in the bay.
- Aquaculture uses should minimize interference with existing commercial prawn fisheries.
- Applications for commercial or industrial uses in the area between Artlish and Tahsish estuaries and north shore of the inlet west of Yaku Bay should be referred to the CWS.
- Commercial recreation opportunities adjacent to Tahsish Kwois Provincial Park should be further explored, which are consistent with the ecosystem representation function of the Park.

* Local knowledge

Unit 2 Fair Harbour

Marine Area	7.4 sq km	**Shoreline**	24.3 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Low		

Description:

Fair Harbour is characterized by a narrow bay with sheltered waters. The unit is road-accessible and is the primary access route to the Plan Area. The unit sees considerable boat traffic. The unit also contains the Kaouk estuary.

Attributes:

- Kaouk River salmon migration route.*
- Seal and sea lion haul out area near Karouk Island.
- 4 eagle nesting sites.
- Eastern end of unit, including Kaouk Estuary is used by migratory birds (swans, dabbling ducks, diving ducks, geese) and is a CWS area of interest.
- Waters of this unit are prone to freezing due to freshwater inflows.*
- Adjacent upland is part of VILUP RMZ 17.
- Finfish aquaculture capability: Limited potential (OA2), Not Recommended at head of Inlet
- Deepwater Oyster aquaculture capability: rated as Good.
- Deepwater Scallop and Marine Plant aquaculture capability: rated as Good.
- Beach aquaculture capability: rated as Medium.

Current Uses and Activities:

- Two *Land Act* shellfish reserves for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations: north shore of unit near Fair Harbour and western end of unit at Markale Peninsula.
- Log booming ground covered by one industrial tenure, several Designated Use Reserves for log handling and storage
- Indian Reserves at mouth of Kaouk River and immediately south of Markale Peninsula.
- MOF Recreation Site and boat launches at Fair Harbour.
- Docks and boat launch at Fair Harbour covered by two commercial tenures and an MOF Map Reserve.
- Fair Harbour is the critical transfer point for farmed salmon and shellfish to market and supplies to farms.
- Federal government wharf and boat launch, and associated Ministry of Forests road terminus and dock provides the primary access for residents and visitors to the Sound and areas south of Brooks Peninisula.
- Safe anchorages at east and west ends of the unit.

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	O	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	✓	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
O	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit
A	The non-tenured activity is absent from the Planning Unit

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to maintain its function as transportation gateway to the Plan Area. New tenures should not impede access to existing commercial docks.
- Commercial and industrial docks and public docks (including marinas and breakwaters) in this unit should be concentrated in the developed portion of the unit at Fair Harbour.
- Any new tenures for commercial and industrial docks at Fair Harbour should be designed to minimize effect on the adjacent estuary and fish migration to the estuary.
- New tenured uses should not interfere with log handling in this unit.
- New tenured uses should not impede safe anchorages in this unit.
- Applications for commercial or industrial uses in the Eastern half of unit, including Kaouk Estuary should be referred to the CWS.
- Tenured uses and activities should be located and managed to minimize conflict with seal/sea lion haul out area.

* Local knowledge

Unit 3 Pinnace Channel

Marine Area	9.3 sq km	**Shoreline**	16.9 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Low		

Description:

This unit is a narrow channel with protected water, and supports a range of uses and activities including aquaculture, fishing and navigation. Since it links Fair Harbour and Artlish with Kyuquot Channel, the unit has considerable boat traffic.

Attributes:

- 5 eagle nesting sites.
- Boat Haven at Dixie Cove Provincial Park, adjacent to this unit.
- Migration route for wild salmon stocks.*
- Proposed route for hydro cable to Kyuquot crosses this unit (from south of Markale Peninsula to northern tip of Hohoae Island.)
- Adjacent upland on Hohoae Island, excluding Dixie Cove Provincial Park, is part of VILUP RMZ 14. Balance of adjacent upland is part of VILUP RMZ 17.
- Finfish aquaculture capability: unit contains a limited area of Good to Moderate (OA1) areas, all of which are within 3km of existing farms.
- Deepwater Oyster aquaculture capability: rated Medium.
- Deepwater Scallop and Marine Plant aquaculture capability: rated Medium.
- Beach Culture aquaculture capability: Not Rated.

Current Uses and Activities:

- First Nations Activities: clam and oyster harvest, commercial and sustenance shellfish beaches, food fishery.*
- Indian Reserve at Markale.
- Salmon aquaculture at Charlie's Place (one tenure).
- Dixie Cove Provincial Park is adjacent to this unit, on Hohoae Island.
- Navigation route between Fair Harbour and Rugged Point.*
- Prawn fishery.*
- Clam and oyster harvest.*

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
X	Shellfish Beach Aquaculture	O	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	✓	Marine Telecommunications & Utilities
✓	Finfish Aquaculture	✓	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit
A	The non-tenured activity is absent from the Planning Unit

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to maintain the range of uses and activities that are present in the unit.
- Aquaculture uses should minimize interference with existing commercial prawn fisheries.
- Public dock applications should be accepted only in and adjacent to the IR at Markale.
- The Regional District and the Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council should provide advice to Canadian Coast Guard on local navigation issues associated with new tenures and permits.

* Local knowledge

Unit 4 Amai Inlet

Marine Area	8.8 sq km	**Shoreline**	23.9 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Medium
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Low		

Description :

This unit is a steep-sided inlet with sheltered waters, and contains the Amai estuary and important bird habitat. It has good capability for several types of aquaculture.

Attributes:

- Herring spawning at head of the inlet.
- Anadromous fish streams: Amai Creek and Soatwoon Creek on north shore.
- Seal and sea lion haul out area near Amai Point at south entrance to unit.*
- 4 eagle nesting sites.
- Clam beaches at mouth of Amai Creek, unnamed stream on south shore.
- Entire unit is used by gulls, grebes, cormorants and is a CWS area of interest.
- Estuary at Amai Creek.
- Adjacent upland is part of VILUP RMZ 17.
- Finfish aquaculture capability: mid and western portions of unit rated Good to Moderate (OA1); entire unit is within 3km of an existing farm.
- Deepwater Oyster aquaculture capability: rated Good.
- Deepwater Scallop and Marine Plant aquaculture capability: rated Good.
- Beach aquaculture capability: several beaches recorded with Good and Medium capability.

Current Uses and Activities:

- *Land Act* shellfish reserve for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations at head of Amai Inlet.
- First Nations Activities: clam and oyster harvest, commercial and sustenance shellfish beaches.*
- Indian Reserve at head of Amai Creek.
- Salmon farm on south shore of inlet.
- Remnants of log dump at mouth, one tenure and several designated use areas for log handling and storage.
- Prawn fishery.*
- Safe anchorage at head of Inlet.
- Established MOF Recreation Site on upland area of Centre Cove under *Land Act* map notation.
- MOF dispersed recreation use area at Thompson Beach.

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
O	Finfish Aquaculture	✓	Commercial Recreation Guiding
O	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit
A	The non-tenured activity is absent from the Planning Unit

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to maintain the existing range of uses, and to accommodate new uses including public docks and shellfish aquaculture.
- Establish *Land Act* Notation of Interest for recreation purposes over waters adjacent to Centre Cove Recreation Site in favour of MOF.
- Finfish applications should be considered for limited tenure modifications, such as anchoring requirements, for waste management regulation requirements, and for establishment of fallow sites associated with existing farms. New salmon aquaculture farms should not be permitted.
- Marine telecommunications and utilities uses require submission of supporting biophysical information.
- Log handling, storage and infrastructure should be limited to one active tenure in this unit at any one time. Location of this tenure will move through time.
- Aquaculture uses should minimize interference with existing commercial prawn fisheries
- Tenured uses should not impede safe anchorage at the head of the inlet.
- Tenured uses and activities should be located and managed to minimize conflict with seal / sea lion haul out area in vicinity of Amai Point.
- Applications for commercial or industrial uses in the unit should be referred to the CWS.

* Local knowledge

Unit 5 Whiteley Island - Cachalot Inlet

Marine Area	14.9 sq km	**Shoreline**	31.1 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Medium
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Low		

Description:

This unit comprises relatively sheltered waters adjacent to Kyuquot Channel, and includes areas of high habitat value. Similar to Unit 3, this unit has considerable boat traffic and supports a range of uses.

Attributes:

- Eelgrass at head of Cachalot Inlet (73 ha.)
- Anadromous fish streams: Narrowgut and Cachalot Creeks.
- 8 eagle nesting sites.
- Portions of this unit, including all of Cachalot Inlet are used by migratory birds (including dabbling ducks, swans and gulls), and are CWS areas of interest.
- Cachalot estuary.
- Strong outflow and northerly winds.*
- Cannery ruins SE of Machta Point (whaling station and pilchard processing); high public recreation value.
- Salmon migration route.*
- Adjacent upland on Union Island and Whiteley Island is part of VILUP RMZ 14, balance of adjacent upland is part of VILUP RMZ 17.
- Finfish aquaculture capability: limited area rated Good to Moderate (OA1); all within 3km of existing farms.
- Deepwater Oyster aquaculture capability: Cachalot Inlet rated Good; balance of unit rated Poor.
- Deepwater Scallop and Marine Plant aquaculture capability: Cachalot Inlet rated Good; balance of unit rated Poor.
- Beach aquaculture capability: several Good and Medium rated beaches for clam and oyster culture recorded in Cachalot Inlet.

Current Uses and Activities:

- One tenure for off-bottom oyster culture on Cachalot Inlet, held by Ka:'yu:'k't'h and Che:k'tles7et'h' First Nation.
- One *Land Act* shellfish reserve for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nation.
- Indian Reserve at Machta Point.
- First Nation Activities: sustenance crab fishery, coomercial and sustenance shellfish beaches, food fishery.*
- Joint venture hatchery proposal on Union Island.
- High public recreation value for wildlife viewing/exploring in Cachalot/ Narrowgut estuary (MOF).
- Salmon farm at Centre Cove on Whitely Island.
- Two tenures for log handling and storage.
- Good seasonal sports fishing*, subject to closures during peak season.
- Recreational crab fishing.*

* Local knowledge

- Geoduck and prawn fishery.*
- Clam and Oyster harvest.*
- Navigation route to Rugged Point.*

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
O	Finfish Aquaculture	✓	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation
Code			
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.		
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.		
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.		
P	The non-tenured activity is present and ongoing in the Planning Unit		
A	The non-tenured activity is absent from the Planning Unit		

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to support the current range of tenured uses while maintaining its conservation values. New uses such as shellfish and marine plant aquaculture should be promoted.
- Aquaculture tenures should minimize interference with existing commercial geoduck and prawn fisheries.
- Marine telecommunications and utilities use applications require submission of supporting biophysical information with license or lease application.
- Finfish applications should be considered for limited tenure modifications, such as anchoring requirements, for waste management regulation requirements, and for establishment of fallow sites associated with existing farms. New salmon aquaculture farms should not be permitted.
- Applications for commercial or industrial uses in the unit should be referred to the CWS.

* Local knowledge

Unit 6 Kyuquot Channel

Marine Area	22.8 sq km	**Shoreline**	28.0 km
Substrate	Hard	**Slope**	Flat
Exposure	High	**Depth**	Medium
Current	Low	**Benthic Summer Temp**	Cold
Roughness	Moderate		

Description:

This unit provides access to Kyuquot Sound. It is exposed to waves and swells and consequently has limited capability for tenured uses. The unit has important habitat, conservation and recreation values associated with rocky shoreline areas.

Attributes:

- Extensive herring spawning along eastern shore.
- Anadromous fish streams: unnamed stream on Union Island.
- 3 eagle nesting sites.
- Salmon migration route.*
- West shore of Kyuquot Channel is used by migratory birds and is a CWS area of interest. Bird Colonies at White Cliff Head, Volcanic Islets, Nipple Rock, and rocks at northern tip of East Entrance Reef.
- *Whidbeyella cartilaginea*, a provincially red-listed species of marine algae occurs at Chatchannel Point on Union Island.
- Rugged Point Provincial Park is adjacent to this unit, the area is a popular destination for remote camping.
- Adjacent upland on Union Island is part of VILUP RMZ 14. Balance of adjacent upland, excluding Rugged Point Provincial Park, is part of VILUP RMZ 17.
- High public recreation value at south end of unit (MOF).
- The area adjacent to Volcanic Cove and McLean Cove has been identified as having high capability for remote tourism development. A *Land Act* notation of interest has been placed on this area to provide for orderly assessment and possible development of the site.
- Finfish aquaculture capability: Not assessed due to exposure to open ocean; Vancouver Island shoreline assessed as Not Recommended.
- Shellfish aquaculture capability: rated as Not Advisable in the main channel due to depth and exposure to open ocean. Western extent of unit not assessed.

Current Uses and Activities:

- First Nations Activities: food fishery, Gooseneck barnacle harvesting, firewood salvage area.*
- Boat haven under *Land Act* map notation at Volcanic Cove, north of Rugged Point.
- Anchorage area at McLean Cove.
- Geoduck fishery.*
- Sport and commercial fishery.*

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
X	Shellfish Beach Aquaculture	X	Public Docks
X	Shellfish Deep Water Aquaculture	X	Float Homes
O	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	O	Commercial Recreation Guiding
X	Log Handling, Storage and Infrastructure	O	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit
A	The non-tenured activity is absent from the Planning Unit

Management Provisions:

- **Conservation Management Emphasis**: This unit should be managed to maintain its important conservation and recreation values.
- Maintain *Land Act* Notation of Interest over Boat Haven at Volcanic Cove in favour of WLAP.
- Marine telecommunications and utilities uses are conditional on submission of supporting biophysical information.
- Marine plant aquaculture uses are conditional on collection of additional biophysical information, through Investigative Permit, for the proposed area of use.
- Licenses or permits for commercial recreation guiding in this unit are conditional on operating practices that follow established guidelines or performance based standards that minimize effects of these activities on bird colonies and migratory bird habitat.
- Floating lodges and base camps in this unit should be acceptable only in the Volcanic Cove, McLean Cove area. Tenure in this area should be consistent with the LWBC-led initiative to identify potential tourism development opportunities.
- Tenured uses and activities at Chatchannel Point should be located and operated in a manner that minimizes disturbance to red and blue-listed species and habitat.
- The impact of development of a remote tourism facility in the Volcanic Cove area should be assessed in relation to local community interest in strengthening existing communities as a tourism base.
- New tenured uses should not impede safe anchorage at McLean Cove.
- All tenure applications for uses along the west shore of Kyuquot Channel, at White Cliff Head, Nipple Rock, Volcanic Islets or East Entrance Reef should be referred to the CWS.
- Activities should be managed to prevent damage or disturbance of bird colonies.

---

* Local knowledge

Unit 7 Clear Passage

Marine Area	25.0 sq km	**Shoreline**	34.5 km
Substrate	Hard	**Slope**	Flat
Exposure	High	**Depth**	Shallow
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Low		

Description :

This unit is very exposed to wind and waves and has very limited capability to support tenured uses. The unit also contains important habitat values.

Attributes:

- Extensive kelp.
- Herring spawning in vicinity of Rugged Point.
- Anadromous fish streams: Kapoose Creek, Porritt Creek*.
- 4 known eagle nesting sites.
- Very important areas for migratory birds, including cormorants, puffins, guillemots petrels, oystercatchers. Bird colonies at Nipple Rock, Grassy Island, McQuarrie Islands. These areas are CWS areas of interest.
- Important Gray whale feeding and migration route.*
- Grassy Island contains habitat for *Laminaria Sinclairii*, a provincially red-listed non-vascular plant, and Hairy Goldfields and Fischer's Chickweed, two species of provincially blue-listed vascular plants.
- Estuary at Kapoose Creek.
- Adjacent upland is part of VILUP RMZ 18.
- Remote campsites south of Rugged Point.
- High public recreation value over entire unit (MOF).
- Finfish aquaculture capability: Not Recommended Rugged Point to Kapoose Creek; not assessed elsewhere due to exposure to open ocean.
- Shellfish aquaculture capability: not rated due to exposure to open ocean

Current Uses and Activities:

- First Nations Activities: Gooseneck barnacle harvesting area, recreational area, gull egg harvesting area, sea urchin harvesting area, food fishery.*
- Indian Reserve at Grassy Island.
- Rugged Point Provincial Park is adjacent to this unit.
- Very high public recreation use; whale watching, especially at Grassy Islands.
- Commercial fisheries for crab, and geoduck*
- Sport and food fisheries.*
- Islets reserved from *Land Act* disposition under provincial Order-in-Council.

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
X	Shellfish Beach Aquaculture	X	Public Docks
X	Shellfish Deep Water Aquaculture	X	Float Homes
X	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	O	Commercial Recreation Guiding
X	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation
Code			
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.		
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.		
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.		
P	The non-tenured activity is present and ongoing in the Planning Unit		
A	The non-tenured activity is absent from the Planning Unit		

Management Provisions:

- **Conservation Management Emphasis**: This unit should be managed to protect its important conservation, recreation and habitat values.
- Marine telecommunications and utilities uses are conditional on submission of supporting biophysical information.
- Licenses or permits for commercial recreation guiding in this unit are conditional on operating practices that follow established guidelines or performance based standards that minimize effects of these activities on bird colonies and migratory bird habitat.
- Tenured uses and activities at Grassy Island should be located and operated in a manner that minimizes disturbance to red and blue-listed species and habitat.
- Activities should be managed to prevent damage or disturbance of bird colonies at Nipple Rock, Grassy Island, McQuarrie Islands.

* Local knowledge

Unit 8 Ououkinsh and Malksope Inlets

Marine Area	9.8 sq km	**Shoreline**	47.2 km
Substrate	Mud	**Slope**	Flat
Exposure	Low	**Depth**	Photic
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Low		

Description:

- This unit comprises two inlets on Checleset Bay, prone to high winds and featuring significant estuaries. This unit is adjacent to Brooks Peninsula Provincial Park and Checleset Bay Ecological Reserve.

Attributes:

- Kelp at mouth of Malksope Inlet.
- Eelgrass at Ououkinsh Estuary and Malksope Estuary.
- Herring spawning at head of Ououkinsh Inlet, and throughout Malksope Inlet.
- Anadromous fish streams: Ououkinsh River and Malksope River; Sockeye run at Power River.*
- Salmon migration route.
- Sea Otter raft areas in Protected Area adjacent to Malksope entrance.*
- 10 known eagle nesting sites.
- Clam beaches at Ououkinsh Estuary, Malksope Estuary, mouth of unnamed stream on south shore of Malksope Inlet.
- Northern shore of Malksope Inlet including Malksope Estuary, and Ououkinsh Estuary are used by migratory birds (including swans and mergansers) and are CWS areas of interest.
- Estuaries at mouths of Malksope and Ououkinsh rivers.
- Mouth of Malksope Inlet and all of Ououkinsh fall within VILUP Special Management Zone 5. Balance of adjacent upland outside of Brooks Peninsula Provincial Park is part of VILUP RMZ 14.
- Finfish aquaculture capability: Not Rated
- Shellfish aquaculture capability: Not Rated
- High public recreation value at Izard Point and Malksope Islands (MOF).

Current Uses and Activities.

- The unit is part of the traditional territory of the Che:k:tles7et'h' First Nation. The balance of the Plan Area is Ka:'yu:'k't'h traditional territory.
- One *Land Act* shellfish reserve for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations in Ououkinsh, and two reserves in Malksope.
- First Nations Activities: commercial and sustenance shellfish and prawn harvesting, food fishery, waterfowl hunting area.*
- Indian Reserves on south shore at head of Ououkinsh Inlet, north shore Malksope Inlet, northern headlands at mouth of Malksope.
- Log booms on north and south shores of Malksope Inlet. One tenure for log storage and handling.
- Public recreation use: Campsite on north side of Malksope Inlet, at mouth. Other campsites immediately adjacent to this unit on the Bunsby Islands and on Power River. Bunsby Islands are a popular destination for sea kayakers.

* Local knowledge

- Safe anchorage at head of Ououkinsh Inlet.
- Islets reserved from *Land Act* disposition under provincial Order-in-Council.

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
O	Shellfish Deep Water Aquaculture	X	Float Homes
O	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	✓	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation
Code			
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.		
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.		
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.		
P	The non-tenured activity is present and ongoing in the Planning Unit		
A	The non-tenured activity is absent from the Planning Unit		

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to support a range of uses and development opportunities.
- The Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council is encouraged to provide referral comments on all tenure applications.
- Tenured uses should not impede safe anchorage at the head of Ououkinsh Inlet.
- Shellfish deep water aquaculture and marine plant aquaculture uses are conditional on collection of additional biophysical information through Investigative Permit, and receipt of capability study results for the proposed area of use.
- Marine telecommunications and utilities uses are conditional on submission of supporting biophysical information.
- Applications for commercial or industrial uses along the northern shore of Malksope Inlet, in Malksope Estuary, or in Ououkinsh Estuary should be referred to the CWS.
- The Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council is encouraged to pursue commercial recreation opportunities on its Reserve at mouth of Malksope Inlet.

* Local knowledge

Unit 9 Mission Group

Marine Area	30.4 sq km	**Shoreline**	54.3 km
Substrate	Hard	**Slope**	Flat
Exposure	High	**Depth**	Photic to Shallow
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Moderate		

Description :

This unit comprises a series of islands offshore of Vancouver Island. Waters of this unit are generally exposed, although some protected beaches exist to the lee of larger islands. The Mission Group has high importance to the Ka:'yu:'k't'h First Nation for a wide variety of uses. The unit is rich in ecological and cultural values.

Attributes:

- Kelp beds throughout the unit.
- Herring spawning throughout this unit.
- 4 eagle nesting sites.
- Portions of unit are important for migratory birds and are CWS areas of interest. Puffin colony on unnamed islet at western mouth of Favourite Entrance.
- Minx Rocks contain habitat for *Laminaria longipes* a provincially red-listed species of marine algae.
- Important feeding and migration area for Gray and Orca whales.*
- Clam beaches at Granite Island, Village Island and Mission Island.*
- Dentalia site north of Village and Spring Islands.*
- The Mission Group is within Vancouver Island Land Use Plan Special Management Zone 5. Primary values of this zone are recreation and marine habitat.
- Finfish aquaculture capability: Not Recommended.
- Deepwater shellfish aquaculture capability: Not Rated
- Beach shellfish aquaculture capability: Not Rated
- High public recreation value over entire unit (MOF).

Current Uses and Activities:

- First Nations Activities: food fishery, Gooseneck barnacle harvesting, geoduck harvesting, commercial and sustenance shellfish and prawn harvesting area.*
- Indian Reserves on McLean, Kamils, Atkis Islands.
- Navigation aid (map notation) at Lookout Island.
- Popular destination for sea kayakers and cruisers.
- Spring Island is an established MOF Recreation Site. Area (including adjacent foreshore) is reserved under *Land Act* UREP for MOF.
- Commercial recreation base camp on Spring Island operates under permit from the Ministry of Forests.
- Safe anchorage at Kamils Anchorage used by commercial fishers and cruisers.
- Islets reserved from *Land Act* disposition under provincial Order-in-Council.

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
O	Shellfish Beach Aquaculture	✓	Public Docks
O	Shellfish Deep Water Aquaculture	X	Float Homes
O	Marine Plant Aquaculture	✓	Marine Telecommunications & Utilities
X	Finfish Aquaculture	O	Commercial Recreation Guiding
X	Log Handling, Storage and Infrastructure	✓	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit
A	The non-tenured activity is absent from the Planning Unit

Management Provisions:

- **Conservation Management Emphasis**: This unit should be managed to protect its sensitive cultural, recreational and ecological values.
- The Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council is encouraged to provide referral comments on all tenure applications.
- Retain *Land Act* Notation of Interest for recreation over waters adjacent to Spring Island in favour of MOF.
- Place *Land Act* Notation of Interest over Kamils Anchorage in favour of WLAP.
- Licenses or permits for commercial recreation guiding in this unit are conditional on operating practices that follow established guidelines or performance based standards that minimize effects of these activities on bird colonies and migratory bird habitat.
- Shellfish beach, deepwater and marine plant aquaculture uses are conditional on collection of additional biophysical information through Investigative Permit, and receipt of capability study results for the proposed area of use.
- Opportunities for existing public recreational camping and commercial recreation on Spring Island should be maintained.
- Tenured uses and activities at Minx Rocks should be located and operated in a manner that minimizes disturbance to red-listed species and habitat.
- Applications for commercial or industrial uses at Favourite Entrance should be referred to the CWS.

* Local knowledge

Unit 10 Barrier Islands

Marine Area	27.6 sq km	**Shoreline**	38.6 km
Substrate	Hard	**Slope**	Flat
Exposure	High	**Depth**	Photic
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Moderate		

Description:

This unit comprises a series of islets and rocks and the southwest shoreline of Union Island. It is very exposed to wind and waves and has limited capability for tenured uses, and contains areas of high habitat value.

Attributes:

- Extensive kelp.
- Herring spawning at south shore of Union Island.
- 5 eagle nesting sites.
- This unit contains several bird colonies, including Thornton Islands, Moos Islets, Munsie Rocks, White Cliff Head (Union Island). The entire unit falls within a CWS area of interest.
- Sea Otter raft areas near Moos Islet.*
- Important Gray whale feeding and migration area.*
- Clam beach.*
- High public dispersed recreation value over entire unit (MOF).
- Adjacent upland areas are part of VILUP RMZ 14.
- Finfish aquaculture capability: Not Rated.
- Deepwater shellfish capability: Not Rated.
- Beach shellfish aquaculture capability: Not Rated.

Current Uses and Activities:

- First Nations Activities: food fishery, Gooseneck barnacle harvesting, geoduck harvesting, commercial and sustenance shellfish harvesting.*
- Commercial geoduck and crab fisheries.*
- Commercial clam harvest.
- Safe anchorage at Kyuquot Bay.*
- Islets reserved from *Land Act* disposition under provincial Order-in-Council.

Use Recommendations (based on "acceptability"):

Tenured Uses			
X	Shellfish Beach Aquaculture	✓	Public Docks
X	Shellfish Deep Water Aquaculture	X	Float Homes
X	Marine Plant Aquaculture	✓	Marine Telecommunications & Utilities
X	Finfish Aquaculture	O	Commercial Recreation Guiding
X	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
✓	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)

* Local knowledge

P	Commercial Fisheries	P	Marine Transportation
Code			
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.		
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.		
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.		
P	The non-tenured activity is present and ongoing in the Planning Unit.		
A	The non-tenured activity is absent from the Planning Unit.		

Management Provisions:

- **Conservation Management Emphasis**: This unit should be managed to maintain its important conservation, recreation and habitat values.
- Tenured uses should not impede safe anchorage at Kyuquot Bay.
- Conditional marine telecommunications and utilities uses require submission of supporting biophysical information with license or lease application.
- Tenured uses and activities should be located and managed to minimize conflict with sea otter raft area.
- Licenses or permits for commercial recreation guiding in this unit are conditional on operating practices that follow established guidelines or performance based standards that minimize effects of these activities on bird colonies and migratory bird habitat.
- Applications for commercial or industrial uses in this unit and all applications for uses within 1 km of the bird colonies on Thornton Island, Moos Islets, Munsie Rocks or White Cliff Head should be referred to the CWS.
- Activities should be managed to prevent damage or disturbance of bird colonies.

* Local knowledge

Unit 11 Nicolaye and Crowther Channels

Marine Area	24.9 sq km	**Shoreline**	83.7 km
Substrate	Hard	**Slope**	Flat
Exposure	High	**Depth**	Photic
Current	Low	**Benthic Summer Temp**	Warm
Roughness	Moderate		

Description:

This unit comprises shoreline of Vancouver Island, a portion of Union Island, and a series of small adjacent islands. The area surrounding Walters Cove contains most of the population of the Plan Area. This unit also contains a variety of resource values of importance to area residents. Much of this unit experiences high exposure to wind and waves.

Attributes:

- Kelp on west shore of Walters Island.
- Eelgrass at Clanninick Estuary.
- Herring spawning throughout this unit.
- Anadromous fish streams: Clanninick Creek, McKay Cove Creek.
- Sea Otter raft area outside of Walters Island.*
- 7 eagle nesting sites; 2 osprey nesting sites*.
- Clam beaches at Clanninick Estuary, east shore of McLean Island, and north of Amos Island.
- North shore of Nicolaye Channel and McKay Cove are used by migratory birds, and are part of a CWS area of interest. Bird colony on islet southwest of Amos Island.
- McKay Cove contains habitat for Fischer's Chickweed, a provincially blue-listed vascular plant.
- The western half of this unit lies within VILUP Special Management Zone 5. Primary values of this zone are recreation and marine habitat. Balance of adjacent upland is part of VILUP RMZ 14.
- Finfish aquaculture capability: Limited OA1 along north shore of Crowther Passage. Not Recommended throughout majority of unit.
- Shellfish aquaculture capability: Not Rated.
- High public recreation value throughout unit (MOF).

Current Uses and Activities

- Indian Reserve at Houpsitas is primary First Nations settlement in Plan Area.
- *Land Act* shellfish reserve for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations on the islet at west side of Union Island.
- First Nations Activities: clam harvest, food fishery.*
- Private land lots along Walters Island facing Walters Cove; several privately owned islands and lots in surrounding area.
- Tenures for log handling and storage in Crowther Channel.
- Safe anchorage at several locations in this unit.
- Established MOF Recreation Site near Trail Creek.
- Tenured infrastructure in this unit includes a wharf on Walters Island, Kyuquot Village, tenured private docks, commercial and industrial docks, public wharf, telecommunications line on Walters Island.
- Uchuck III passenger and freight ferry terminal on Walters Island.

* Local knowledge

- Float plane landing on regular basis in Walters Cove.
- Tourism facilities include campsites, marinas, Houpsitas, Walters Cove, and Slambang Lodge on Union Island. Stamp Pacific Lodge operates a floating fish camp June through August (currently untenured).
- Islets reserved from *Land Act* disposition under provincial Order-in-Council.

Use Recommendations (based on "acceptability"):

Tenured Uses			
O	Shellfish Beach Aquaculture	✓	Public Docks
O	Shellfish Deep Water Aquaculture	✓	Float Homes
O	Marine Plant Aquaculture	✓	Marine Telecommunications & Utilities
X	Finfish Aquaculture	O	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	✓	Floating Lodges & Base Camps
✓	Private Docks	✓	Conservation
✓	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation
Code			
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.		
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.		
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.		
P	The non-tenured activity is present and ongoing in the Planning Unit.		
A	The non-tenured activity is absent from the Planning Unit.		

Management Provisions:

- **Community Management Emphasis**: This unit should be managed maintain uses that are compatible and complementary to adjacent communities of Houpsitas and Walters Island.
- The Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council is encouraged to provide referral comments on all tenure applications.
- Establish *Land Act* Notation of Interest for recreation over waters adjacent to Trail Creek in favour of MOF.
- Tenured uses should not impede navigation or safe anchorage in this unit.
- Shellfish beach, deep water aquaculture and marine plant aquaculture uses are conditional on collection of additional biophysical information through Investigative Permit, and receipt of capability study results for the proposed area of use.
- Licenses or permits for commercial recreation guiding in this unit are conditional on operating practices that follow established guidelines or performance based standards that minimize effects of these activities on bird colonies and migratory bird habitat.
- Tenures and activities at McKay Cove should be located and operated in a manner that minimizes disturbance to blue-listed species and habitat.
- Tenured uses and activities should be located and managed to minimize conflict with sea otter raft area.

---

* Local knowledge

- Applications for commercial or industrial uses in this unit and applications for all uses within 1 km of Amos island bird colony should be referred to the CWS.
- Activities should be managed to prevent damage or disturbance of bird colony.

* Local knowledge

* Local knowledge

Unit 12 Surprise Island

Marine Area	5.0 sq km	**Shoreline**	15.7 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Photic
Current	Low	**Benthic Summer Temp**	Cold
Roughness	Low		

Description :

This is a small unit comprising the eastern end of Crowther Channel. The unit features occasional rough weather and is an important and busy navigational route connecting Kyuquot Village with Kyuquot Sound.

Attributes

- Herring spawning on north and south shores of Surprise Island.
- Anadromous fish stream: British Creek.
- 1 eagle nesting site.
- Clam and oyster beaches.*
- Adjacent upland is part of VILUP RMZ 14.
- Finfish aquaculture capability: OA1 between western end of Surprise Island and Chutsis Island. Not Recommended in remainder of unit.
- Deepwater oyster capability: rated Poor
- Shellfish aquaculture capability: oysters Poor, scallops Not Rated.
- Beach aquaculture capability: Not Rated

Current Uses and Activities:

- First Nations Activity: food fishery, oyster harvesting, commercial and sustenance shellfish harvesting.*
- Shellfish scallop aquaculture tenure on north end of Surprise Island.
- Established MOF Recreation Site at British Creek.
- Sport and food fishery.*
- Prawn fishery.*

Use Recommendations (based on "acceptability"):

Tenured Uses			
X	Shellfish Beach Aquaculture	X	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
X	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation
Code			

* Local knowledge

✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit.
A	The non-tenured activity is absent from the Planning Unit.

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to maintain its current range of uses.
- Establish *Land Act* Notation of Interest for recreation over waters adjacent to British Creek in favour of MOF.
- Tenured uses should not impede navigation or safe anchorage in this unit.
- Aquaculture uses should minimize interference with existing commercial prawn fisheries.
- Marine telecommunications and utilities uses are conditional on submission of supporting biophysical information.

* Local knowledge

Unit 13 Chamiss Bay

Marine Area	2.6 sq km	**Shoreline**	6.6 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Cold
Roughness	Low		

Description :

This unit consists of a small bay and estuary on the west shore of Kyuquot Sound. Chamiss Bay is the centre of log handling activities in the Plan Area. Logs are towed to this area and then barged out of the Plan Area.

Attributes

- Eelgrass at Chamiss Estuary.
- Herring spawning throughout this unit.
- Anadromous fish streams: Chamiss Creek.
- 2 eagle nesting sites.
- Clam Beach at Chamiss Estuary.*
- Chamiss Bay is used by migratory birds and is part of a CWS area of interest.
- Proposed route for hydro cable to Kyuquot crosses this unit.
- Chamiss Bay is connected by road to Kyuquot.
- Adjacent upland is part of VILUP RMZ 14.
- Finfish aquaculture capability: Not Recommended.
- Deepwater Oyster aquaculture capability: unit is rated as Medium.
- Deepwater Scallop and Marine Plant aquaculture capability: unit is rated Medium.
- Beach Culture: several beaches rated Good to Medium for clam and oyster.

Current Uses and Activities

- Indian Reserve at mouth of Chamiss Creek.
- First Nations Activities: food fishery, commercial and sustenance shellfish harvesting, clam harvesting area.*
- Two tenures for log handling and storage, one tenure for a logging camp.
- Prawn fishery.*

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	✓	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	✓	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
✓	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

* Local knowledge

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit.
A	The non-tenured activity is absent from the Planning Unit.

Management Provisions

- **General Marine Management Emphasis**: This unit should be managed to accommodate commercial uses.
- Aquaculture tenures should minimize interference with existing commercial prawn fisheries.
- Applications for commercial or industrial uses in this unit should be referred to the CWS.

* Local knowledge

Unit 14 Hohoae and Moketas Islands

Marine Area	35.5 sq km	**Shoreline**	30.6 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Cold
Roughness	Low		

Description:

This is a relatively large unit that lies at the center of Kyuquot Sound. It comprises much of the waters surrounding Hohoae and Moketas Islands. These waters are cold and relatively sheltered. The unit contains important navigational routes and areas of high capability for aquaculture.

Attributes:

- 2 known eagle nesting sites.
- Waters off Guillod Point, and between Hohoae and Union Islands are important for migratory birds and are CWS areas of interest. Pelagic Cormorant colony at south end of Hohoae Island.
- Migratory route for salmon stocks.*
- North shore of Hohoae Island is part of an important navigation route linking Kyuquot and Fair Harbour, Tahsish and Chamiss.*
- Seal and sea lion haul out areas at Warren Rocks; seal haul out at Chamiss Point.*
- Proposed route for hydro cable to Kyuquot crosses this unit (from northern tip of Hohoae Island to Chamiss Bay).
- Adjacent upland is part of VILUP RMZ 14.
- Finfish aquaculture capability: Good to Moderate (OA1); northeastern shores of Hohoae Not Recommended.
- Deepwater Oyster aquaculture capability: Good to Medium.
- Deepwater Scallop and Marine Plant aquaculture capability: rated Medium in Eelstow Passage.
- Beach aquaculture capability: Not Rated

Current Uses and Activities:

- First Nations Activities: clam harvest, deer harvesting on islands.*
- One existing finfish tenure on south side of Hohoae Island. Prior to plan commencement, the Province offered another tenure on the north side of Hohoae Island. This tenure is currently subject to federal review.
- Recreational prawn fishery between Warren Rocks and Moketas Island. Commercial Prawn fishery throughout the unit*
- Tenures for log handling and storage.

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	✓	Marine Telecommunications & Utilities
✓	Finfish Aquaculture	O	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit.
A	The non-tenured activity is absent from the Planning Unit.

Management Provisions

- **General Marine Management Emphasis**: This unit should be managed to support a range of tenured uses including finfish and deep water shellfish culture. Additional tenures for these uses should be carefully planned and managed to minimize possible conflict with navigation and fisheries.
- Tenured uses and activities should be located and managed to minimize conflict with seal / sea lion haul out area.
- Aquaculture uses should minimize interference with existing commercial prawn fisheries.
- Licenses or permits for commercial recreation guiding in this unit are conditional on operating practices that follow established guidelines or performance based standards that minimize effects of these activities on bird colonies and migratory bird habitat.
- Applications for commercial or industrial uses in the waters off Guillod Point, and within 1 km of pelagic cormorant colony on south of Hohoae Island should be referred to the CWS.
- The Regional District and the Ka:'yu:'k't'h and Che:k'tles7et'h' Band Council should provide advice to Canadian Coast Guard on local navigation issues associated with new tenures and permits.
- Activities should be managed to prevent damage or disturbance of bird colony.

* Local knowledge

Unit 15 Jansen Bay

Marine Area	2.5 sq km	**Shoreline**	6.3 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Cold
Roughness	Low		

Description:

This unit is a small bay with relatively sheltered waters.

Attributes:

- Herring spawning at southern half of Jansen Bay.
- Anadromous fish stream: unnamed stream draining Jansen Lake.
- Jansen Bay is important for migratory birds and is a CWS area of interest.
- Adjacent upland is part of VILUP RMZ 14.
- Finfish aquaculture capability: Not Recommended or assessed below OA2 (Poor).
- Deepwater Oyster aquaculture capability: unit rated Medium.
- Deepwater Scallop and Marine Plant aquaculture capability: unit rated Medium.
- Beach aquaculture capability: several areas at the north end of unit rated Good and Medium for beach culture of clams and oysters.
- High public dispersed recreation value in north end of unit (MOF).

Current Uses and Activities:

- First Nations Activities: commercial and sustenance shellfish harvesting, clam and oyster harvesting.*
- Prawn fishery.*
- Clam and Oyster harvest.*

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
X	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.

* Local knowledge

X	**Not Acceptable.** The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit.
A	The non-tenured activity is absent from the Planning Unit.

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to support existing uses and activities, with consideration for development of new aquaculture tenures.
- Marine telecommunications and utilities uses are conditional on submission of supporting biophysical information.
- Aquaculture uses should minimize interference with existing commercial prawn fisheries.
- Applications for commercial or industrial uses in this unit should be referred to the CWS.

* Local knowledge

Unit 16 Lower Kashutl Inlet

Marine Area	17.7 sq km	**Shoreline**	35.7 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Cold
Roughness	Low		

Description:

This unit comprises the lower half of a large inlet, waters are sheltered but prone to strong outflow winds. The unit contains a range of resource and conservation values. Adjacent upland has high mineral potential, and Monteith Bay contains an active gypsum mine tenure.

Attributes:

- Eelgrass at Kauwinch Estuary.
- Anadromous fish stream: Kauwinch River.
- 5 eagle nesting sites.
- The unit is important for migratory birds and is a CWS area of interest.
- Clam beaches at western Kauwinch Estuary.*
- Important salmon migration route.*
- Unit experiences strong outflow winds and is prone to surface water freezing due to freshwater influx.*
- Adjacent upland is part of VILUP RMZ 14.
- Finfish aquaculture capability: Good to Moderate (OA1) in most of this unit; Not Recommended at Kauwinch.
- Deepwater Oyster aquaculture capability: unit rated Medium.
- Deepwater Scallop and Marine Plant aquaculture capability: rated Good at Monteith Bay, balance of unit rated Medium.
- Beach aquaculture capability: rated Good for beach culture of oysters and clams at Kauwinch and at north end of unit.
- High public recreation value in Hankin Cove and Kashutl (MOF).

Current Uses and Activities:

- *Land Act* shellfish reserve for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations at Hankin Cove.
- Indian Reserve west of Kauwinch River mouth.
- First Nations Activities: food fishery, clam harvest, commercial and sustenance shellfish harvesting.*
- Two tenures for log handling and storage.
- Small gypsum mine at shoreline at Monteith Bay; mining company holds a light industrial barge-loading facility tenure at shoreline. The area has high mineral potential and there are other claims in the area.
- Prawn fishery.*

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
O	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit.
A	The non-tenured activity is absent from the Planning Unit.

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to maintain its existing range of uses. Consideration should also be given to development of shellfish aquaculture tenures in this unit.
- Commercial and industrial docks in this unit should be accepted only for mine development and mineral exploration.
- Marine telecommunications and utilities uses are conditional on submission of supporting biophysical information.
- Aquaculture uses should minimize interference with existing commercial prawn fisheries.
- Applications for commercial or industrial uses in this unit should be referred to the CWS.

* Local knowledge

Unit 17 Easy Inlet

Marine Area	4.1 sq km	**Shoreline**	12.0 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Cold
Roughness	Low		

Description:

This unit consists of a relatively small, sheltered bay that opens onto Kashutl Inlet. The unit has high conservation values and an active log handling facility.

Attributes:

- Eelgrass south of Elaine Creek on west side of inlet.
- 2 eagle nesting sites.
- Waters of this unit are prone to freezing due to freshwater influx.
- Clam beach at mouth of Easy Creek.*
- Anadromous fish streams: 3 unnamed streams on west side of inlet, Jansen Creek supports the only sockeye salmon run in the sound.*
- The entire unit is used by migratory birds and is a CWS area of interest.
- Adjacent upland is part of VILUP RMZ 14.
- Finfish aquaculture capability: Limited OA2 (Poor); or Not Recommended.
- Deepwater Oyster aquaculture capability: unit rated Medium.
- Deepwater Scallop and Marine Plant aquaculture capability: unit rated as Good.
- Beach aquaculture capability: beaches along western shore of inlet rated Good capability for beach culture of oysters; the beach at Kaouk also has Good capability for clam culture.

Current Uses and Activities:

- *Land Act* shellfish reserve for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nation at Jansen Creek.
- First Nations Activities: commercial and sustenance shellfish harvesting.*
- Indian Reserve north of mouth of northernmost unnamed stream.
- Safe anchorage offshore of Jansen Creek.
- Three tenures for log handling and storage, one of which is a dry land sort.

* Local knowledge

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
X	Shellfish Deep Water Aquaculture	X	Float Homes
X	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
O	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
✓	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit.
A	The non-tenured activity is absent from the Planning Unit.

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to maintain its existing range of uses, with consideration to development of new shellfish and marine plant aquaculture.
- Any tenured uses and activities in this unit should be designed and operated to protect the Jansen Creek sockeye run.
- Commercial and industrial docks in this unit should be considered only for mine development and mineral exploration.
- Log handling, storage and infrastructure tenures should be limited to two active tenures in this unit at any one time.
- Marine telecommunications and utilities uses are conditional on submission of supporting biophysical information.
- Tenured uses should not impede safe anchorage near Jansen Creek.
- Applications for commercial or industrial uses in this unit should be referred to the CWS.

* Local knowledge

Unit 18 Upper Kashutl Inlet

Marine Area	4.4 sq km	**Shoreline**	12.6 km
Substrate	Mud	**Slope**	Sloping
Exposure	Low	**Depth**	Mid-depth
Current	Low	**Benthic Summer Temp**	Cold
Roughness	Low		

Description:

This unit comprises the upper reaches of a large inlet. The unit is prone to strong outflow winds and surface freezing conditions in winter due to fresh water influx.

Attributes:

- Anadromous fish stream: Kashutl River.
- 3 eagle nesting sites.
- The entire unit, including the Kashutl Estuary, is important for migratory birds and is a CWS area of interest.
- Icing conditions, cold, wind, fresh water at surface.*
- Adjacent upland is part of VILUP RMZ 14.
- Finfish aquaculture capability: Very limited OA1 at southern extent of unit, remainder of unit is Not Recommended due to siting considerations or assessed as less than OA2 (poor).
- Deepwater Oyster aquaculture capability: Not rated
- Deepwater Scallop and Marine Plant aquaculture capability: unit rated as Good.
- Beach aquaculture capability: Kashutl Estuary at the top of the inlet rated as Good for beach culture of clams and oysters.

Current Uses and Activities:

- First Nations Activities: commercial and sustenance shellfish harvesting, clam harvest.*
- Indian Reserve on western side of Kashutl River mouth.
- One tenure for log handling and storage.
- Safe anchorage at head of inlet.
- Clam beaches.*

Use Recommendations (based on "acceptability"):

Tenured Uses			
✓	Shellfish Beach Aquaculture	✓	Public Docks
✓	Shellfish Deep Water Aquaculture	X	Float Homes
✓	Marine Plant Aquaculture	O	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
✓	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
✓	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation
Code			

* Local knowledge

✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit.
A	The non-tenured activity is absent from the Planning Unit.

Management Provisions:

- **General Marine Management Emphasis**: This unit should be managed to maintain a range of tenured activities, including new shellfish and marine plant aquaculture tenures.
- Tenured uses should not impede with safe anchorage at the head of the inlet.
- Marine telecommunications and utilities uses are conditional on submission of supporting biophysical information.
- Applications for commercial or industrial use in the unit should be referred to the CWS.

* Local knowledge

Unit 19 Brooks, Checleset, Kyuquot Approaches

Marine Area	411 sq km	Shoreline	0.57 km
Substrate	Hard to Sand	Slope	mainly Flat, Sloping near Brooks
Exposure	High	Depth	Mid-depth to Photic near Kyuquot,
Current	Low	Benthic Summer Temp	Cold
Roughness	Moderate to Low		

Description:

This unit comprises a large offshore area, primarily used for non-tenured activities and limited opportunity for tenured development due to exposure and depth.

Attributes:

- Eastern end (off Brooks Peninsula) and western end (adjacent to Barrier Islands) of unit are used by migratory birds and are CWS areas of interest.
- Migration corridor for whales, sea lions, birds and salmon stocks.
- Sea otters*
- No beaches in the unit.
- Aquaculture capability: Not Rated.

Current Uses and Activities:

- First Nations Activities: Food fishery.*
- Commercial fishery.*
- Sports fishery*
- Navigation and boating traffic.

Use Recommendations (based on "acceptability"):

Tenured Uses			
X	Shellfish Beach Aquaculture	X	Public Docks
X	Shellfish Deep Water Aquaculture	X	Float Homes
X	Marine Plant Aquaculture	✓	Marine Telecommunications & Utilities
X	Finfish Aquaculture	✓	Commercial Recreation Guiding
O	Log Handling, Storage and Infrastructure	X	Floating Lodges & Base Camps
X	Private Docks	✓	Conservation
X	Commercial and Industrial Docks		
Non-Tenured Activities			
P	First Nations	P	Public Recreation (non-commercial)
P	Commercial Fisheries	P	Marine Transportation

Code	
✓	**Acceptable**. The use is considered acceptable and appropriate. Applications for this use should be accepted for processing and evaluation. Acceptance of an application does not guarantee that a tenure will be approved.
O	**Conditionally Acceptable**. The use is considered conditionally acceptable. New applications for this use should be accepted for processing and evaluation only if they meet the terms of relevant Management Provisions in the Plan.
X	**Not Acceptable**. The use is considered inappropriate. Applications for this use should not be accepted for processing and evaluation.
P	The non-tenured activity is present and ongoing in the Planning Unit.

* Local knowledge

A	The non-tenured activity is absent from the Planning Unit.

Management Provisions:

- **General Marine Management Emphasis**: This unit should remain available for a variety of non-tenured activities. The area should be considered in any future Plan review to incorporate management direction from DFO-sponsored integrated oceans management processes.
- Applications for commercial or industrial use in the unit should be referred to the CWS.

* Local knowledge

4. Plan Assessment

4.1. Environmental Implications of Recommendations

Methodology

The environmental review attempts to evaluate the sensitivity of key ecological attributes found in the Plan Area to potential impacts from tenured uses recommended in the Plan, and to determine the overall environmental risks and benefits of the Plan. The review uses a combined quantitative and qualitative approach to evaluate the overall impacts of Plan recommendations on the Plan Area as well as impacts to each of the 19 planning units. As there is no way to estimate the actual range and number of new tenured uses that might occur as a result of the Plan, the environmental review provides only a rough approximation of potential environmental risks and benefits.

The Plan Area as a whole was evaluated according to the overall distribution of each of the three management emphasis categories as well as key ecological attributes such as eelgrass beds, and red and blue-listed species. The environmental protection measures included in the Plan, such as management provisions were also examined.

For the individual units, a more quantitative approach was used to identify the relative risks and benefits of the Plan. This required identifying five Valued Environmental Components (VECs): kelp beds, intertidal clam beaches, salmon streams, eelgrass beds, seabird habitat, and pinniped (seal, sea lion haul out areas, sea otter raft areas). Where data was available, the value or importance of each of the six VECs for each unit was rated, based on its relative abundance within the unit. While data availability was one of the considerations in selecting the VECs, the environmental review is nevertheless limited by the accuracy and comprehensiveness of currently available biological information in the Plan Area. The level of existing and potential tenures was also rated for each unit. For each combination of VEC and tenure type, a sensitivity rating was assigned. The ratings for VEC value, tenure type level, and VEC-tenure sensitivity were then combined to obtain a "relative risk" value. By aggregating the results of this analysis, it was possible to make overall assessments of the potential risks to VECs in each unit and in the Plan Area as a whole. Adjacency issues, management provisions and conservation areas recommended in the Plan were also assessed qualitatively to augment the unit assessment.

A more detailed outline of this methodology and its application to the Plan Area can be found in Appendix 5.

General Plan Environmental Implications

The Plan does not recommend elimination of existing tenures, although for some uses (primarily finfish) the Plan identifies areas where no additional tenures should be contemplated. It can therefore be assumed that the existing levels of environmental impact as well as potential risk to the marine environment are maintained.

In terms of assessing new environmental risk attributable to the Plan, the categorization of planning units by management emphasis is also a factor. The Conservation Management emphasis units, which account for almost 28% of the Plan Area, tend to afford greater benefit to environmental attributes as they are predominated by or adjacent to significant marine and foreshore ecological values. The General Marine Management emphasis units, occupying the largest proportion of the Plan Area at 56%, tend to have a greater variety of potential uses, and therefore vary in potential environmental impact, although these units are typically characterized by lower biological values. The Community Management emphasis, limited to just one unit yet accounting for 15% of the Plan Area, promotes multiple uses and activities associated with adjacent upland settlement areas, therefore, affording the least benefit to environmental values.

Appendix 5 summarizes the degree to which key identified biological attributes are represented by planning units in the three management emphasis categories. Conservation Management emphasis units

contain a significant proportion of kelp beds, invertebrate fisheries values, and seabird habitats. However, biological attributes such as eelgrass beds, and adult salmon migration routes may be left more vulnerable by their relative lack of representation in Conservation management emphasis units.

The management provisions that promote environmental impact mitigation or otherwise reduce impact on biological resources should also help to reduce the overall environmental risks of new tenured uses. Most management provisions are general and tend to be applied to units with a Conservation Management emphasis. However, they are not applied to all units with key biological attributes, and consequently may increase the environmental risks from new development in units with General or Community emphasis. Offsetting some of the potential risks are the many government agency siting guidelines and criteria which are applied to mitigate or avoid impacts to specific marine biological attribute when development is proposed. These siting guidelines and criteria were incorporated in the VEC-tenure sensitivity assessment.

Finally, the Plan identifies "conservation" uses as acceptable uses in all of the 19 planning units. This means that there may be further opportunities to afford protection or conservation of discrete areas of high biological and recreational values through the establishment of *Land Act* reserves or notations of interest. These opportunities may therefore result in additional protection of values that cumulatively should help offset some of the overall environmental risks associated with new tenures in the Kyuquot Sound Plan Area.

Individual Unit Environmental Assessment

Appendix 5 contains the results of the environmental review for each unit. According to this assessment, and the information used, 11 units are rated as having low residual risk (i.e. there is little or no change between existing and potential Plan risk) and 5 units with moderate residual risk (i.e. there is a slight change between existing and potential Plan risk). Three units were rated as having no risk under the Plan, compared to the existing management regime. This is largely a reflection of the relatively lower environmental values or absence of tenured uses in these units. In general, all VECs experience a slight increase in environmental risk due to increased potential use in the Plan Area.

Summary of Assessment

It is difficult to quantify the degree of environmental risk associated with the Kyuquot Sound Coastal Plan, primarily because it does not in itself result in the approval of tenured uses. The number and type of actual new tenures that may be derived from the Plan is also highly speculative, although the Plan does recommend restricting certain types of uses. There is also considerable debate and lack of clear scientific knowledge of the effect of various foreshore uses on marine ecosystems. As a result, the environmental review is largely qualitative.

Because the Plan recognizes and accepts existing uses, the Plan cannot reduce environmental risk from current levels. New risks will depend on the increase in numbers and types of tenures, which are difficult to determine as they depend on many factors independent of the Plan. Since approximately 28% of the Plan Area is identified as Conservation Management emphasis, it can be assumed that management provisions and types and levels of tenured uses will provide for lower environmental risk in these areas of generally high biological value. The General Marine and Community Management emphasis areas may have potentially higher risks to ecological values as they accommodate many forms of commercial and industrial uses, although they have generally lower biological values. The opportunity for "conservation" uses in all units may cumulatively offset or reduce environmental risks over the Plan Area.

4.2. Economic Implications of Recommendations

Methodology

The North Island Straits Coastal Plan, completed in late 2002, included an attempt to conduct an abridged multiple accounts analysis (MAA) as a means to assess economic implications of that Plan's

recommendations. This method is used by provincial planning agencies and Crown corporations to systematically document and evaluate impacts from different perspectives or "accounts."[7] The multiple accounts evaluation proved very difficult because the Plan cannot guarantee that an application will be made or that applications will be approved and result in new tenured developments. This assessment of economic implications of the Kyuquot Coastal Plan is limited in similar fashion to the North Island Straits Plan, and will therefore rely largely on qualitative assessment.

The North Island Straits Coastal Plan presented a list of coastal uses and their anticipated economic effect. That list is reproduced in Table 5. While this data cannot readily be used to quantify the economic effects of the Kyuquot Sound Coastal Plan, it does illustrate the economic effect of the various uses contemplated by the Plan.

Table 5 Economic Impact Coefficients for Selected Coastal Uses

Foreshore/ Nearshore Use	Capital Investment ($'000/site)	Annual Direct Jobs (PYs/site)	Annual Total Jobs (PYs/site)	Annual Direct BC Revenue* ($/site)
Finfish Aquaculture	900	4.0	7.60	43,000
Shellfish Beach Aquaculture	150	0.9	1.60	9,700
Shellfish Deepwater Aquaculture	110	2.0	3.30	21,500
Marine Plant Aquaculture	6	2.0	3.30	21,500
Floating Lodges	1150	11.0	13.30	43,900
Commercial Rec. Base Camps	490	4.9	5.80	19,600
Heli-Log Drop Sites **	460	4.0	8.30	60,000
Log Sorts	850	1.5	3.10	22,500
Log Storage Pens	225	1.0	2.10	15,000
Public Docks and Wharves	56	1.8	3.6	26,000
Commercial Docks and Wharves	740	15.7	32.5	236,000
Tidewater Industrial	1300	47.8	58.3	121,000

Sources: North Island Straits Coastal Plan, MSRM, December 2002

* Includes taxes on direct, indirect and induced incomes as well as direct LWBC lease / rental fees.

** Capital investment estimate for heli-log drop sites assumes 6 sites each operated for 2 months per year.

General Assessment

The Kyuquot Sound Coastal Plan designates uses as acceptable or acceptable at current levels if they are already tenured in a given planning unit. The Plan also recognizes and supports existing activities that are neither tenured nor managed by the Province (e.g. recreation activities) where they are known to occur. Therefore, the Plan affirms all existing uses and activities within the Plan Area, and along with them any current and projected economic benefits. However, the economic benefits of these uses, such as log handling and private moorage, are not attributed to the Plan's accounts.

In certain planning units, existing uses are designated with conditions related to maintaining current levels of use. Applications in process prior to approval of this Plan are intended to proceed through the normal interagency referral process, which would consider existing siting policies and the guidelines in the Kyuquot Plan.

Alternative locations may have cost and profitability implications for planned and proposed uses which can have indirect employment, provincial revenue and community impacts. These impacts are not quantified due to their uncertain nature and a lack of readily available data.

---

[7] See *Social and Economic Impact Assessment for Land and Resource Management Planning in British Columbia: Interim Guidelines*, Integrated Resource Planning Committee, August, 1993. The guidelines for land and resource management planning are currently being reviewed and updated.

recommendations. This method is used by provincial planning agencies and Crown corporations to systematically document and evaluate impacts from different perspectives or "accounts."[1] The multiple accounts evaluation proved very difficult because the Plan cannot guarantee that an application will be made or that applications will be approved and result in new tenured developments. This assessment of economic implications of the Kyuquot Coastal Plan is limited in similar fashion to the North Island Straits Plan, and will therefore rely largely on qualitative assessment.

The North Island Straits Coastal Plan presented a list of coastal uses and their anticipated economic effect. That list is reproduced in Table 5. While this data cannot readily be used to quantify the economic effects of the Kyuquot Sound Coastal Plan, it does illustrate the economic effect of the various uses contemplated by the Plan.

Table 5 Economic Impact Coefficients for Selected Coastal Uses

Foreshore/ Nearshore Use	Capital Investment ($'000/site)	Annual Direct Jobs (PYs/site)	Annual Total Jobs (PYs/site)	Annual Direct BC Revenue* ($/site)
Finfish Aquaculture	900	4.0	7.60	43,000
Shellfish Beach Aquaculture	150	0.9	1.60	9,700
Shellfish Deepwater Aquaculture	110	2.0	3.30	21,500
Marine Plant Aquaculture	6	2.0	3.30	21,500
Floating Lodges	1150	11.0	13.30	43,900
Commercial Rec. Base Camps	490	4.9	5.80	19,600
Heli-Log Drop Sites **	460	4.0	8.30	60,000
Log Sorts	850	1.5	3.10	22,500
Log Storage Pens	225	1.0	2.10	15,000
Public Docks and Wharves	56	1.8	3.6	26,000
Commercial Docks and Wharves	740	15.7	32.5	236,000
Tidewater Industrial	1300	47.8	58.3	121,000

Sources: North Island Straits Coastal Plan, MSRM, December 2002

* Includes taxes on direct, indirect and induced incomes as well as direct LWBC lease / rental fees.

** Capital investment estimate for heli-log drop sites assumes 6 sites each operated for 2 months per year.

General Assessment

The Kyuquot Sound Coastal Plan designates uses as acceptable or acceptable at current levels if they are already tenured in a given planning unit. The Plan also recognizes and supports existing activities that are neither tenured nor managed by the Province (e.g. recreation activities) where they are known to occur. Therefore, the Plan affirms all existing uses and activities within the Plan Area, and along with them any current and projected economic benefits. However, the economic benefits of these uses, such as log handling and private moorage, are not attributed to the Plan's accounts.

In certain planning units, existing uses are designated with conditions related to maintaining current levels of use. Applications in process prior to approval of this Plan are intended to proceed through the normal interagency referral process, which would consider existing siting policies and the guidelines in the Kyuquot Plan.

Alternative locations may have cost and profitability implications for planned and proposed uses which can have indirect employment, provincial revenue and community impacts. These impacts are not quantified due to their uncertain nature and a lack of readily available data.

---

[1] See *Social and Economic Impact Assessment for Land and Resource Management Planning in British Columbia, Interim Guidelines*, Integrated Resource Planning Committee, August, 1993. The guidelines for land and resource management planning are currently being reviewed and updated.

The Kyuquot Coastal Plan will primarily affect future uses and related economic development. Quantitative estimates of the incremental impacts of the Plan for key commercial uses were not identified, as mentioned above, due to the speculative nature of determining future sites.

New log handling, storage and infrastructure uses would potentially occur wherever industry has identified future harvesting plans for adjacent uplands and existing siting criteria can be addressed. The Plan may impose costs on certain aquaculture, commercial and industrial activities, particularly where uses are conditionally acceptable. However, since the Plan's main impact is to establish general direction for dealing with applications, rather than changing specific siting criteria, it is unlikely that these costs would be greater than under the current management regime.

In addition to the implications for specific coastal uses, the Kyuquot Plan has some indirect socio-economic benefits that result from coastal planning that cannot be quantified. These include greater investor certainty and reduced capital and operating costs resulting from affirmation of existing uses and clearer management direction for new development, which should clarify the terms and conditions governing the siting approval process administered by LWBC. Reduction in resource conflicts is also an anticipated benefit that will result in sustainable economic development.

The proportion of new investment and employment opportunities that will accrue to communities and residents of the Plan Area depends on the local sourcing of labour and materials, supplies and equipment. Local sourcing depends on factors such as the type of use, the proximity of the development to communities in the Plan Area, local production capacity and the hiring policies of tenure holders. The Plan attempts to ensure these benefits accrue to local communities by restricting many uses requiring infrastructure, such as docks and wharves or floating lodges, to planning units containing existing settlements.

Economic benefits of the Plan are expected to accrue to both the Plan Area and to larger communities in the surrounding area.

The above discussion applies to both First Nation and non-First Nation communities. Unemployment rates among First Nations are typically much higher than for non-aboriginal population, and First Nations communities are much more reliant upon a mixed-subsistence economy which relies on marine food sources, particularly fisheries, to supplement household incomes or compensate for low incomes. Aboriginal harvests of marine resources are likely to remain important parts of the Aboriginal income stream in the Plan Area. The Plan encourages increased involvement for the Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations in economic activities, while respecting traditional resource based uses and activities. If properly implemented, the Plan should have positive economic implications for Ka:'yu:'k't'h and Che:k'tles7et'h' First Nations.

5. Summary and Follow-up

5.1. Summary of Plan Recommendations

Table 6: Summary of Recommended Uses by Planning Unit

	1. Tahsish Inlet	2. Fair Harbour	3. Pinnace Channel	4. Amai Inlet	5. Whiteley Island, Cachalot Inlet	6. Kyuquot Channel	7. Clear Passage	8. Ououkinsh and Malksope Inlets	9 Mission Group	10. Barrier Islands	11. Micholaye and Crowther Channels	12. Surprise Island	13. Chamiss Bay	14. Hohoae and Moketas Islands	15. Jansen Bay	16. Lower Kashuti Inlet	17. Easy Inlet	18. Upper Kashuti Inlet	19. Brooks, Chekleset, Kyuquot Approaches
Shellfish Beach Aquaculture	✓	✓	X	✓	✓	X	X	✓	O	X	O	X	✓	✓	✓	✓	✓	✓	X
Shellfish Deep Water Aquaculture	✓	✓	✓	✓	✓	X	X	O	O	X	O	✓	✓	✓	✓	✓	X	✓	X
Marine Plant Aquaculture	✓	✓	✓	✓	✓	O	X	O	O	X	O	✓	✓	✓	✓	✓	X	✓	X
Finfish Aquaculture	X	X	✓	O	O	X	X	X	X	X	X	X	X	✓	X	X	X	X	X
Log Handling and Storage	✓	✓	✓	O	✓	X	X	✓	X	X	✓	X	✓	✓	X	✓	O	✓	O
Private Docks	X	X	X	X	X	X	X	X	X	X	✓	X	X	X	X	X	X	✓	X
Commercial and Industrial Docks	O	O	X	X	X	X	X	X	X	✓	✓	X	✓	X	X	O	✓	X	X
Public Docks	O	O	O	✓	✓	X	X	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	X
Float Homes	X	X	X	X	X	X	X	X	X	X	✓	X	X	X	X	X	X	X	X
Marine Telecommunications and Utilities	O	✓	✓	O	O	O	O	O	✓	✓	✓	O	✓	✓	O	O	O	O	✓
Commercial Recreation Guiding	✓	✓	✓	✓	✓	O	O	✓	O	O	O	✓	✓	O	✓	✓	✓	✓	✓
Floating Lodges and Base Camps	X	X	X	X	X	O	X	✓	✓	X	✓	X	✓	X	X	X	X	X	X
Conservation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Management Emphasis	G	G	G	G	G	C	C	G	C	C	T	G	G	G	G	G	G	G	G

G=General; C=Conservation
T=Community

Use Coding

✓	Use Acceptable
O	Use Conditionally Acceptable
X	Use Not Acceptable

5.2. Information Limitations

The unit maps and unit direction presented in this Plan will be used by LWBC, potential applicants and the public to determine the acceptability of a Crown foreshore or nearshore application. Plan users should be aware of the limitations inherent in the planning unit descriptions and maps. While the maps

and text for each unit outline known values and uses within each unit, they can only represents information available at the time of Plan preparation. Consequently, this Plan cannot and should not replace LWBC requirements for site specific information to accompany an application.

Since the Planning Unit maps are available on the MSRM web site and are linked to all supporting maps and information sources within MSRM, they will be regularly updated and will therefore be of increasing value to LWBC and other users in such activities as plan auditing, plan amendment, site planning and marketing.

5.3. Summary of Recommendations for *Land Act* Notations

A summary of management prescriptions for *Land Act* notations of interest is provided in Table 7 below. In order for LWBC to place or maintain notations over these foreshore and nearshore areas, official letters of request will be required from WLAP and / or MOF.

Table 7: Summary of Foreshore / Nearshore Areas Recommended for Land Act Notation of Interest (NOI)

Planning Unit	Specific Area	Purpose and Sponsoring Agency
Unit 4: Amai Inlet	Centre Cove	Place NOI for recreation purposes in favour of MOF
Unit 6: Kyuquot Channel	Volcanic Cove	Maintain NOI for Boat Haven in favour of WLAP
Unit 9: Mission Group	Kamil's Anchorage	Place NOI for Boat Haven in favour of WLAP
	Spring Island	Maintain NOI for recreation purposes in favour of MOF
Unit 11: Nicholaye and Crowther Channels	Trail Creek	Place NOI for recreation purposes in favour of MOF
Unit 12: Surprise Island	British Creek	Place NOI for recreation purposes in favour of MOF

5.4. Commercial Recreation Operating Practices for Bird Colonies and Migratory Bird Habitat

Section 3.8 identifies planning units where commercial recreation guiding uses should be conditional on following established guidelines and / or performance based standards for minimizing disturbance and impact on bird colonies and migratory bird habitat. These units are summarized in Table 8 below, along with recommended outline for development and scope of such guidelines.

Table 8: Summary of Areas Requiring Guidelines for Commercial Recreation Operating Practices

Affected Area	Planning units 6, 7, 9, 10, 11, 14
Participants & Process	CWS, WLAP to develop guidelines and /or performance based standards with LWBC. Tenure applicants to consult with appropriate agency as to availability of guidelines / standards.
Time Frame	Time frame for development established by agencies.
General Content	Location of sensitive species, type of species and habitat Species populations, lifecycle events e.g. breeding, rearing, feeding and migration. Species sensitivities during activities e.g. noise disturbance during breeding. Proposed operating activities and timing, distances.

5.5. First Nations Considerations

The Province views participation by the Ka:'yu:'k't'h and Che:k'tles7et'h First Nations in shaping the planning unit recommendations within their traditional territories as an opportunity to share information with the Province about their interests in the Plan Area. Through such participation, the Plan is intended to foster improved working relationships, reduced impact of land use activities on First Nations activities, and greater participation of the Ka:'yu:'k't'h and Che:k'tles7et'h First Nations in economic development of resources.

The Plan continues to encourage all tenure applicants to develop working relationships with the Ka:'yu:'k't'h and Che:k'tles7et'h First Nations. Such working relationships could include:

- joint venturing or partnerships for development;
- major First Nations involvement in operations;
- training and employment of First Nations people in a development or tenure;
- working with First Nations to identify and avoid areas of cultural and spiritual significance;
- First Nations support in marketing of a development or business
- guardian programs for marine conservation and recreation areas.

It is recommended that non-tenured users of Crown foreshore and nearshore also make efforts to engage First Nations in discussion, where an activity is potentially in conflict or a source of friction with First Nations cultural values and sensitive sites.

The Ka:'yu:'k't'h and Che:k'tles7et'h First Nations Administrative Office can be reached at

General Delivery, Kyuquot, BC V0P 1J0

Telephone (250) 332-5259.

5.6. Recommended Projects to Enhance Economic Development Opportunities

This Plan identifies potential opportunities provided by improved access to foreshore and nearshore for a variety of uses. However, availability of land is only one of several factors that determine the level of economic development that may occur in the area. Other factors such as access to capital, political environment, access to skills, training, infrastructure and transportation may create local barriers and constraints to future success of the Plan.

Key recommendations for exploring and enhancing the development opportunities inherent in the Kyuquot Sound Coastal Plan Area are outlined below.

Shellfish and Marine Plant Aquaculture Capability Study

Capability for shellfish and marine plant aquaculture has been assessed for much of the Plan Area, but several areas remain to be studied. Notably, Ououkinsh and Malksope Inlets, McKay Cove, and the areas surrounding Nicolaye and Crowther channels have not been assessed. A survey of shellfish aquaculture capability for these areas will help to identify areas for development with the advantage of close proximity to existing communities.

Affected Area	Planning units 8, 9, 11
Participants & Product	• MSRM to fund project. • MAFF to contract study using appropriate methodology and standards. • Study should be conducted in consultation with the Ka:'yu:'k't'h and Che:k'tles7et'h First Nation and local community. • Technical survey and mapping of shellfish & marine plant aquaculture capability for Mission Group, Nicholaye and Crowther Channels, McKay Cove, Ououkinish and Malksope Inlets. • Report and maps of capability for public release.
Time Frame	• Commence by June 2003. • Complete study before January 2004.

Coastal Industry Barriers and Opportunities Study

Members of the advisory committee for this Plan reported that they face considerable obstacles to development of marine related industry due to lack of marine services, such as fuel docks. It is recommended that a study be completed to focus on requirements and ways to address development issues in the Kyuquot Plan Area. In addition, through its strategic planning process, the Ka:'yu:'k't'h

and Che:k'tles7et'h have already identified a number of desirable economic concepts which require feasibility studies and business planning. These include a lodge in the Bunsby Islands area, a marina/campground on Granite Island near Houpsitas, and a shellfish/finfish processing facility. Funding sources for feasibility studies for these concepts should also be addressed, along with expansion of the Ka:'yu:'k't'h and Che:k'tles7et'h Strategic Plan to incorporate the views of other residents of the Plan Area.

Affected Area	Plan Area
Participants & Product	• MSRM to fund project. • Steering committee of MSRM (Chair), LWBC, MAFF and RDCS with Ka:'yu:'k't'h and Che:k'tles7et'h First Nations, in cooperation with planning advisory committee. • Report which includes assessment of tourism, recreation, aquaculture and other marine business opportunities, requirements, and constraints in Plan Area. Identify measures and action plan to overcome barriers, including marketing, funding programs, and required infrastructure. Identify funding sources and timelines for concept feasibility and business plans, as well as expansion of local strategic plan. • Complete study before November 2003.
Time Frame	• Initiate by July 2003. • Complete by December 2003.

Tourism Product Analysis

A recent study of tourism opportunities for the Northern Nuu'chah'nulth First Nations, examined the capability of the area to support a variety of tourism products. That report identified opportunities for several products including cabin or lodge development, heritage interpretation, wildlife viewing and kayaking. The report also identified local development considerations for each of these products.

Based on the findings of that report, there is a need for supporting work to recommend tourism products and business initiatives that best match market conditions, the landscape and capability of the area, and the capacities and aspirations of the local community.

Affected Area	Plan Area
Participants & Product	• MSRM to fund project. • Steering Committee of MSRM (Chair), LWBC and Ka:'yu:'k't'h and Che:k'tles7et'h First Nations in cooperation with RDCS. • Committee to oversee study of tourism product opportunities for the Plan Area, including most feasible products in consideration of local landscape, community capacity, NTC tourism study and parks and recreation areas. • Study also to identify prerequisites to product development, including training requirements.
Time Frame	• Initiate by September 2003. • Complete by December 2003.

5.7. Marine Conservation & Integrated Coastal Management

Five planning units contain areas recommended as temporary notations of interest, for the express purpose of maintaining key marine conservation and recreation values. Future options for conservation and recreation management include one or combinations of such designation tools as: provincial marine parks or federal National Marine Conservation Areas; *Canada Oceans Act* marine protected areas; fisheries closures; and permanent *Land Act* reserves.

DFO has recently initiated an integrated oceans management planning process, pursuant to the July 2002 *Canada Oceans Strategy* and its associated policy for integrated management of coastal and marine areas. The policy provides for mechanisms to address marine conservation and integrated management

planning for marine ecosystems for both large and smaller oceans areas. The existing West Coast Vancouver Island Aquatic Management Board (WCVIAMB) is a three year pilot project of the federal government with provincial, Nuu-chah-nulth and local governments to address integrated management and related oceans issues. This Board has the potential to become formally involved in planning work for federally-administered oceans resources that will complement and strengthen the work done in the Kyuquot Sound Coastal Plan.

The WCVIAMB has provided comments on additional planning work for Kyuquot Sound. As part of the current Board, the Province has recommended additional planning work that would include a further assessment of the areas recommended in the Kyuquot Coastal Plan for *Land Act* notation of interest for recreation and conservation values, as part of a broader regional assessment. A determination of the most appropriate conservation or protection tools for individual areas would be part of this assessment. This determination should be made during the next 24 month period, and recommendations as to the most appropriate management option identified.

5.8. Plan Variation Process

Plan provisions that identify a use in a planning unit as "Not Acceptable " or "Conditionally Acceptable"may be challenged on a site-by-site basis. This process to vary the Plan's recommendations must be made in writing to the LWBC Service Centre Director by the proponent.

LWBC should only accept a request for Plan variation if it is based on one or more of the following conditions, which are to be specifically addressed in the variation request letter:

- The proposed use is based on new technologies or methods of operation that were not available, not contemplated or not considered during development of the Plan;
- The proposed use represents, or is part of a new economic activity or venture that was not considered or contemplated during development of the Plan;
- The proposed use is based on new information that was not available at the time of plan development

Letters of support from local government and / or First Nations are encouraged in support of the variation proposal.

The recommended Plan variation process is as follows:

- The proponent provides a formal letter requesting Plan variation to the LWBC Service Centre Director, with relevant rationale and documentation, including geographic location of the proposal. A non-refundable fee will be levied by LWBC for accommodating the request.
- Within 15 days of receiving the variation request letter, LWBC will distribute it to a standing interagency resource management committee for consideration.
- The committee will review the variation request and make a recommendation to the LWBC Service Centre Director within 60 days of receipt of the letter from LWBC. The proponent may be requested to make a presentation to the interagency management committee. The committee will recommend acceptance or rejection of the variation request and any subsequent information required for inclusion in a tenure application if the request is upheld.
- LWBC will consider the recommendations of the committee and advise the appellant of the LWBC decision. If the decision is to accept an application, the proponent may complete the LWBC application form and the application will be processed according to LWBC standard procedures, subject to any other LWBC requirements or issues.

LWBC acceptance and processing of an application based on a successful Plan variation request should not be interpreted as support for issuance of a tenure by LWBC or the interagency management committee.

A successful Plan variation request will not automatically result in change to the Plan's acceptable use provisions for that unit. Permanent change to such provisions may, however be made at the time of Planreview if there have been a large number of variation requests.

The variation process for the Kyuquot Coastal Plan should be confirmed by the LWBC Service Centre Director and the MSRM Regional Director.

5.9. Plan Review and Amendment

Three years from the anniversary date of Plan approval, the Ministry of Sustainable Resource Management (MSRM) will prepare an audit report on tenure applications and approvals that addresses the degree of compliance with the Plan. A listing of interpretation issues, Plan variation requests and any public comments received during the three year period, as well as recommended plan amendments will be included in the report along with recommended actions or plan adjustments.

The audit report will be presented to the standing interagency committee chaired by MSRM. The committee will use this report as the basis of a formal Plan review, which may lead to the redrafting and reaffirmation of the Plan by government. The process for redrafting or reaffirmation will include discussions with affected local government, First Nations, members of the planning advisory committee, boards associated with integrated oceans management, and interest groups. Any revised or modified Plan will be posted on the MSRM website.

5.10. Summary of Follow Up Activities

Table 9. Summary Schedule of Follow Up Activities

Sequence	Name of Activity	Initiation Date	Lead Responsibility
1	Confirm interagency agreement for Kyuquot Plan variation process	May 2003	LWBC & MSRM directors
2	Conduct shellfish & marine plant aquaculture capability study for units 8, 9, 11	June 2003	MAFF
3	Conduct coastal industry barriers and opportunities study	July 2003	MSRM (chair) with MAFF, LWBC, RDCS, First Nations
4	Official requests submitted from agencies for notations of interest	July 2003	WLAP & MOF
5	Develop operating guidelines/ performance based standards for minimizing impact of tenure operations on bird colonies & migratory bird habitat	July 2003	LWBC with WLAP, CWS
6	Establish notations and reserves	August 2003	LWBC
7	Conduct tourism product analysis	September 2003	MSRM (chair) with LWBC, RDCS, First Nations
8	Initiate marine conservation assessments & integrated management work in Plan Area	April 2004	MSRM & WLAP with WCVIAMB, DFO, CWS, Parks Canada
9	Prepare Audit Report & Formal Plan Redraft (if required)	June 2006	MSRM
Ongoing	Planning Unit Variations	As required	LWBC

Appendix 1. Governance Principles for Sustainable Resource Management

Vision

Sustainable resource management that optimizes economic development of the province's natural resources while protecting ecosystem integrity, enhancing community well being and ensuring an enduring legacy of prosperity for future generations.

Goals

A strong, competitive and vibrant provincial economy

A supportive social infrastructure

Safe, healthy communities and a sustainable environment

Sound Governance

Principles

Accountability: Setting performance-based standards and indicators and implementing mechanisms for compliance, auditing and reporting on progress towards sustainable resource management. An effective enforcement regime is a key part of accountability.

Certainty: Making timely and clear resource management decisions within a predictable and understandable regulatory framework.

Competitiveness: Ensuring that British Columbia remains internationally competitive by removing barriers to investment and promoting open trade.

Continual improvement: Learning from the past and looking for new and improved approaches to resource management.

Efficiency: Maximizing the net benefits arising from the allocation, development and use of natural resources.

Innovation: Encouraging innovative approaches, technologies and skills to ensure the sustainability of natural resources.

Integration: Ensuring that resource management decisions integrate economic, environmental and social considerations for the benefit of present and future generations.

Science-based decision-making: Making justifiable decisions informed by science-based information and risk assessment.

Shared responsibility: Encouraging co-operation among First Nations; federal, provincial and local governments; industry and non-governmental organizations in developing and implementing resource management policies.

Transparency: Establishing open and understandable decision-making processes including consulting with key interests prior to making decisions. Transparency also includes the public release of monitoring and compliance records, and tracking of sustainability indicators.

Appendix 2. First Nations, Agency, and Interest Group Discussions

Table A.1 Government, First Nations and Interest Groups Contacted in Plan Development

Group, Agency, Nation	Nature of Contact
First Nations, Regional Government, and Community	
Ka:'yu:'k't'h and Che:k'tles7et'h Band Council	Staff meetings, Council meetings
Regional District of Comox Strathcona	Staff meetings, Committee meeting (1)
Staff and West Coast Committee	
Kyuquot Coastal Plan Advisory Committee	Local meetings (6)
West Coast Vancouver Island Aquatic Management Board	Board meetings (2), Board staff liaison
Industry	
BC Shellfish Growers Association	Information exchange
Council of Marine Carriers	Information exchange
Pacific Halibut Management Association	Information exchange
Pacific Prawn Fishermen's Association	
Sea Kayak Guide Alliance of BC	Information exchange
Underwater Harvesters Association	Information exchange
BC Salmon Farmers Association	Information exchange
Marine Harvest Sea Farms	Meetings (3); information exchange
Vancouver Island North Visitors Association	Information exchange
Interfor	Information exchange
Provincial and Federal Agencies	
Canadian Wildlife Service	Meeting (1); information exchange
Canada Coast Guard	Meeting (1); information exchange
Fisheries and Oceans Canada	Meeting (1); information exchange
Land & Water BC	Meetings (3)
Ministry of Forests	Meeting (1); information exchange
Ministry of Agriculture, Food & Fisheries	Meetings (3); information exchange
Ministry of Water, Land & Air Protection (Parks)	information exchange
Non-Government Organizations	
Canadian Parks and Wilderness Society	Meeting; information exchange
Council of BC Yacht Clubs	Meeting; information exchange
Outdoor Recreation Council of BC	information exchange
Sea Kayak Association of BC	information exchange
Sport Fishing Institute	Meeting; information exchange

Figure A2. 1: Regional District of Comox-Strathcona Letter of Support

REGIONAL DISTRICT
Comox-Strathcona

COMMUNITY PLANNING SERVICES

Email: planning@rdcs.bc.ca

March 5, 2003

John Bones, Director
Coast and Marine Planning Office
Ministry of Sustainable Resource Management
PO Box 9373
Station Provincial Government
Victoria, BC V8W 9M3

Sent by Email: John.bones@gems3gov.bc.ca

Re: Kyuquot Sound Coastal Plan

Dear Mr. Bones,

The Regional District of Comox Strathcona would like to take this opportunity to thank you for our involvement in the Kyuquot Sound Coastal Plan. Please insert the following statement in the Kyuquot Sound Coastal Plan, as an agency statement from the Regional District of Comox-Strathcona.

Sincerely,

Gerard V. LeBlanc, MCIP
General Manager

cc Stephen Connolly

g:\planning\draft plans\kyuquot\rdcs final comment.doc

600 Comox Road, Courtenay, BC V9N 3P6
Telephone (250) 334-6000 • Fax (250) 334-8156
Toll Free in Area Code (250) 1-800-331-6007
www.rdcs.bc.ca

Agency Statement:
Regional District of Comox-Strathcona

A Regional District functions to provide effective local government to rural residents while concurrently representing municipalities on regional issues. This partnership allows for the creation and coordination of services for rural and urban areas. The Kyuquot Sound Coastal Plan, which affects Electoral Area 'G' of the Regional District of Comox-Strathcona, will provide an important tool to assist in land use decisions and long term planning.

The *Local Government Act* provides Regional Districts with the authority to develop local land use planning through a variety of mechanisms, among them Official Community Plans and Zoning Bylaws. In consultation with First Nations, federal and provincial agencies, local communities and rural residents, it is the intent of the Regional District of Comox-Strathcona to develop local government land use regulations for the Kyuquot Sound area. The Kyuquot Sound Coastal Plan will serve as a guide in this process and as a resource reference for ongoing land use referrals and development proposals.

Regional District of Comox-Strathcona

Figure A2. 2: Ka: 'yu: 'k't'h'/Che:k:tles7et'h Nation Letter

Ka:'yu:'k't'h'/Che:k:tles7et'h' Nation

April 25, 2003

Mr. John Bones, Director
Coastal and Marine Planning Office
Ministry of Sustainable Resource Management
P.O. Box 9373
Station Provincial Government
Victoria, B.C. V8W 9M3

RE: KYUQUOT SOUND COASTAL PLAN

Dear Mr. Bones,

The Ka:'yu:'k't'h'/Che:k'tles7et'h' First Nations would like to thank you for involving us in the Kyuquot Sound Coastal Plan. This is a major step forward over past processes, even though it was clearly stated that the Kyuquot Sound Coastal Planning process would proceed with or without us. In the past, during the Commission on Resources and the Environment (C.O.R.E.) process, our involvement on a First Nation Government to Provincial Government basis was ignored. During this CORE process the Provincial commitment to "without prejudice to Treaty" was also reduced from a commitment in the first drafts to no commitment in the final draft. Since the time of CORE we have been spending significant amounts of scarce funds to "negotiate" lands out of Parks for Treaty purposes, with no success to date. At this time in history when we are working so hard to find a path of certainty for all British Columbians, we cannot be building more barriers to Treaty. This is one reason we do not trust the process and need a strong commitment from the Provincial Government that this new 'layer' of planning will not unduly constrain our negotiations towards Self-Government.

Our First Nations are building capacity in the areas of shellfish and finfish aquaculture as we speak. However, we have a long way to go and are greatly concerned that the result of this Kyuquot Sound Coastal Plan will be to attract a large influx of investment and tenures to our Traditional Territory. This will not only change our lifestyle and compromise the availability of opportunities to settle Treaties, but even more

General Delivery Kyuquot, BC V0P 1J0 Phone: (250) 332-5259 Fax: (250) 332-5210

importantly, may force change at a pace, which will be intolerable by our People. The pressures on our Community to change are already intense and we will need to be diligent and relentless in our Capacity Building to meet the challenges this Kyuquot Sound Coastal Plan will bring, not the least of which will be the Regional District Planning and Zoning process.

Other concerns regarding this planning process:

1. The lack of funding for data gathering regarding the natural resource itself, including coastal zone beach (geomorphologic) processes;
2. Further segregation of the natural resource base in terms of jurisdiction, which does not support the concept of "hishuk ist tsawalk" (everything is one).

In closing, we would like to add that we are committed to working as a community with Aboriginal and non-Aboriginal peoples living in Kyuquot. We are committed to finding solutions and moving forward. We ask that you consider the implications of what you are doing with this Kyuquot Sound Coastal Plan and take care to assist the Community of Kyuquot and the Ka:'yu:'k't'h/Che:k'tles7et'h' First Nations in dealing with the fall-out from this initiative.

Sincerely yours,

Nancy Gillette

Nancy Gillette

On Behalf of the Ka:'yu:'k't'h' / Che:k:tles7et'h' Council

Appendix 3. VILUP Designations

SMZ-5: South Brooks-Bunsby

Location:	extending from Brooks-Nasparti protected area southeast along coast to Kyoquot
Total Area:	approximately 6,200 ha
Primary Values:	(see LIARC report) Coastal recreation values and opportunities Marine species populations and habitat (sea otter, eagles) Archaeological values
Overall Management Guidance:	main focus should be on maintenance/recovery of scenic, recreation and tourism values, as well as cultural heritage values; maintenance of sea otter and bald eagle habitat
Primary Objectives	
Visual Resources:	Description: highly significant scenic values along coastline Objective: Special Visual Resource Management Strategies: emphasis should be on visual restoration of impacted areas (Mt. Paxton, St. Paul's Dome) Recreation Resources: Description: significant values associated with land/water interface: marine fishing, kayaking, scuba-diving and beachcombing, particularly Spring Islands Objective: Special Recreation Resource Management
Tourism Resources:	Description: high values and capability associated with coastline Objective: Special Tourism Management
Fish:	Description: known anadromous fisheries in Clanninick Creek, high values in Malksope and Ououkinsh River Objective: General Fish Management
Wildlife:	Description: sea otter habitat, bald eagles, and waterfowl wintering areas in estuaries of Clanninick Creek, Malksope and Ououkinsh River; lower upland wildlife values Objective: Special Wildlife Management with emphasis on coastal species Strategies: develop habitat management strategies for coastal species
Water:	Description: some unstable terrain, esp. along Malksope Inlet; some drainages with high equivalent clearcut area Objective: General Watershed Management
Community Water	Description: Andrews Creek area is designated community watershed Objective: Community Watershed Management
Cultural Heritage Resources:	Description: known archaeological values Objective: General Cultural Heritage Resource Management
Secondary Objectives	
Timber:	Description: lower to moderate productivity, high proportion of mature timber, except between Mt. Paxton and St. Paul's Dome Objective: Special Timber Resource Management
Biodiversity:	Description: this zone is part of the Kashutl draft landscape unit, which also encompasses RMZ 14 and portions of Brooks-Nasparti protected area; mostly CWHvh1; marbled murrelet capability Objective: Basic Biodiversity Conservation Management Strategies: to the extent that old seral forest retention will be required within the contributing land base portions of the landscape units, such retention should be concentrated within the SMZ-portion of the landscape units and where necessary to conserve marbled murrelet habitat
Cave/Karst:	Objective: General Cave/Karst Management Access: Objective: General Access Management
Non-Forest Resource Descriptions	Aquaculture: Description: very limited potential for finfish culture, shellfish culture potential unknown

RMZ-14: Kashutl

Location:	coastal zone along Kyuquot Sound, between South Brooks-Bunsby SMZ and Tahsish-Kwois protected area; includes Union and other islands in Kyuquot Sound
Total Area:	approximately 39,100 ha
Zone Category and Overall Management Direction:	General Management Zone for integrated resource management, with emphasis on integration of timber values with scenic values along coast, as well as cultural heritage values
Forest Objectives and Strategies	
Access:	Objective: General Access Management
Biodiversity:	Description: this zone is part of the Kashutl draft landscape unit; CWH vh1, vm1 and vm2 are the main variants and well represented in protected areas; approximately 40% old forest Objective: Basic Biodiversity Conservation Management Strategies: consider retaining more than one third of the old seral target if necessary to accommodate critical marbled murrelet habitat requirements, as well as ungulate connectivity between Brooks-Nasparti and Tahsish-Kwois protected areas
Cave/Karst:	Description: dispersed pockets of cave/karst Objective: General Cave/Karst Management
Cultural Heritage Resources:	Description: high known values Objective: General Cultural Heritage Resource Management
Fish:	Description: intermediate; anadromous in lower Kauwinch, Kashutl Objective: General Fish Management
Recreation Resources:	Description: values associated with shoreline Objective: General Recreation Resource Management
Timber:	Description: generally lower to moderate productivity, with pockets of higher productivity; over 50% of forest cover in mature, with second growth concentrated along rivers in lower elevations Objective: General Timber Resource Management Strategies: limited opportunities for Enhanced Timber Harvesting and Enhanced Silviculture exist and should be identified at landscape level of planning
Tourism Resources:	Description: high capability for backcountry, coastal and facility-oriented tourism Objective: General Tourism Management
Visual Resources:	Description: extensive visually sensitive areas along coastline Objective: General Visual Resource Management with emphasis on areas visible from coastal waters
Water:	Description: indication of unstable terrain segments; some drainages with high equivalent clearcut area (Kashutl, Kauwinch, Malksope) Objective: General Watershed Management Strategies: monitoring of hydrological indicators
Wildlife:	Description: intermediate values; ungulate winter ranges, marbled murrelets Objective: General Wildlife Management
Non-Forest Resource Descriptions	
Aquaculture:	Description: abundant areas of good potential for coastal finfish and shellfish culture; some existing operations
Mineral Resources:	Description: Moderate metallic mineral potential; moderate industrial mineral potential; some mineral tenures

RMZ-17: Artlish-Kaouk

Location:	Artlish and Kaouk River watershed
Total Area:	approximately 39,400 ha
Zone Category and Overall Management Direction:	General Management Zone, with significant fish, wildlife, biodiversity values, as well as high amounts of mature timber; integration of visual and recreation values
Forest Objectives and Strategies	
Access:	Objective: General Access Management
Biodiversity:	Description: this zone is comprised by the Artlish and Kaouk draft landscape units; significant old growth and wildlife habitat values Objective: General Biodiversity Conservation Management
Cave/Karst :	Description: karst in upper Artlish watershed Objectives and strategies: General Cave/Karst Management
Cultural Heritage Resources:	Objective: General Cultural Heritage Resource Management
Fish:	Description: High anadromous values in Artlish, Kaouk and Narrowgut systems Objective: General Fish Managemen
Recreation Resources:	Description: values associated with coastline and lower Artlish and Kaouk Rivers (Artlish River Spruce Flats); access to Tahsish Inlet Objective: General Recreation Resource Management Strategies: maintain values associated with Artlish riparian system; consider establishment of recreation trail/site under FPC (mouth of Artlish and along riparian corridor)
Timber:	Description: moderate productivity, higher along rivers; over 2/3 in mature forests Objective: General Timber Resource Management
Tourism Resources:	Description: high capability for coastal tourism; kayaking from bases in Fair Harbour Objective: General Tourism Management
Visual Resources:	Description: sensitive coastline Objective: General Visual Resource Management
Water:	Description: sensitive terrain; generally low equivalent clearcut area Objective: General Watershed Management
Wildlife:	Description: moderate to high values, ungulate winter ranges, marbled murrelets Objective: General Wildlife Management
Non-Forest Resource Descriptions	
Aquaculture:	Description: abundant areas of good potential for coastal finfish and shellfish culture; some existing operations
Mineral Resources:	Description: Moderate metallic mineral potential; high industrial mineral potential; some mineral tenures.

RMZ-18: Eliza

Location:	Eliza and Espinosa peninsulas up to Zeballos Inlet, as well as Zeballos Tahsis peninsula up to Little Zeballos drainage
Total Area:	approximately 34,700 ha
Zone Category and Overall Management Direction:	Enhanced Forestry Zone, particularly suited for enhanced timber harvesting in suitable areas (e.g. areas which are not visually sensitive), as well as enhanced silviculture on most productive sites; emphasis on scenic values along coast, and integration of associated recreation/tourism opportunities; objectives for biodiversity are to be integrated at the basic stewardship level in accordance with FPC requirements; adaptive road engineering/deactivation efforts are indicated to maintain terrain and watershed integrity
Primary Forest Objectives	
Timber:	Description: generally moderate productivity, higher north of Little Espinosa Inlet and along Espinosa Creek; over half of forest cover is mature Objective: Enhanced Timber Harvesting and Enhanced Silviculture
Fish:	Description: anadromous values in several smaller creeks (Kapoose, Tatchu) Objective: General Fish Management
Community Water:	Description: Barton Creek is designated community watershed Objective: Community Watershed Management
Visual Resources:	Description: visually sensitive areas all along coastline Objective: General Visual Resource Management with emphasis along coast
Secondary Forest Objectives	
Access:	Objective: General Access Management
Water:	Description: presence of unstable terrain, particularly on slopes in Eliza peninsula; equivalent clearcut area monitoring indicated Objective: General Watershed Management
Recreation Resources:	Description: associated with coastline Objective: General Recreation Resource Management
Tourism Resources:	Description: significant use and high capability for coastal tourism Objective: General Tourism Management with emphasis along coast
Wildlife:	Description: lower ungulate values; marbled murrelet detections along coast Objective: General Wildlife Management
Biodiversity:	Description: this zone is comprised by the Eliza draft landscape unit; generally lower significance Objective: Basic Biodiversity Conservation Management
Cultural Heritage Resources:	Objective: General Cultural Heritage Resource Management
Non-Forest Resource Descriptions	
Aquaculture:	Description: abundant areas of good potential for coastal finfish and shellfish culture; some existing operations
Mineral Resources:	Description: Moderately high metallic mineral potential; moderate industrial mineral potential; some mineral tenures.

Appendix 4. Decision Tools

Decision Rules For Determination of Acceptable Uses and Activities

General Considerations

A use is initially identified as **acceptable** if the use already exists and is tenured in a unit.

An existing use initially identified as **acceptable** is changed to conditionally recommended if information and input determines there is an expectation of significant user or resource conflicts; or if the unit is unable to support additional uses due to a lack of capable areas that meet established siting criteria.

A use is also identified as **conditionally acceptable** if it does not exist in the unit, but would be considered potentially compatible with existing values and resources, depending on the submission of more specific information with a tenure application. Such information could include: biophysical capability, results of a required review process, completion of a campsite strategy, or development of operating guidelines. Specific siting conditions or limitations would also result in the identification of a use as conditionally acceptable.

A use is initially identified as **not acceptable** if the use is currently not present in the unit and: the biophysical capability assessment of the area shows no or poor capability for the use; if information and input determines there is an expectation of significant user or resource conflicts, or if the use is considered incompatible with adjacent upland designations.

An activity (i.e. not tenured or managed by the provincial government) is identified as **present** or **absent** from a unit, based on information known about the activity.

Use-Specific Considerations:

Shellfish beach aquaculture (beach or deep water aquaculture) is identified as **acceptable** if provincial government shellfish capability studies show high to moderate capability and such development does not alienate known shellfish beaches with established First Nations, recreational or commercial harvesting. It is also **acceptable** where LWBC has reserved sites for future First Nations development.

Shellfish deep water aquaculture is identified as **acceptable** if provincial government shellfish capability studies show high to moderate capability exists in a unit.

Marine plant aquaculture is initially identified as **acceptable** if provincial government capability mapping for deep water scallop aquaculture shows high to moderate capability exists in a unit.

Finfish aquaculture is identified as **acceptable** where provincial government opportunity studies show high to moderate capability. Where the unit exhibits compatibility or capacity concerns, the use may be changed.

Log Handling, Storage and Infrastructure is identified as **acceptable** if industry has identified future timber harvesting plans for adjacent upland, and siting criteria can be addressed.

Commercial and Industrial Docks are identified as **acceptable** in those units where it already occurs.

Private Docks are identified as **acceptable** if it exists in a unit or if the unit contains private land on the upland.

Float Homes are identified as **acceptable** if the unit currently contains tenured floating structures or floating communities.

Marine Telecommunications & Utilities use is identified as **acceptable** if there is an adjacent community on the upland, if there is an expectation of development (such as utilities supporting sanitary facilities at a campsite) or if the unit is considered suitable for a potential wind or wave energy generation facility.

Public Docks are identified as **acceptable** if there is an adjacent community on the upland, or if the need for public access is anticipated.

Commercial Recreation Guiding is generally identified as **acceptable**. Where guiding activities have the potential to impact sensitive migratory bird values this use is changed to **conditionally acceptable** subject to adherence to appropriate guidelines.

Floating Lodges and Base Camps are generally **acceptable**, with the exceptions that it is **not acceptable** in units where it may detract from existing recreational values or from community infrastructure. The use is **not acceptable** in units with existing road-accessible tourism infrastructure.

Conservation use is **acceptable** as a potential use in all units as well as in units where *Land Act* reserves or notations of interest already occur.

Modifications:

All of the above general and specific initial determinations may be modified as a result of social preferences, including comments and concerns from local government, the public and First Nations.

Technical Siting and Compatibility Criteria for Tenured Uses

The following references are intended to clarify how management direction may vary depending on specific circumstances. Where no source is cited, management direction is considered to apply in all situations

Key:

A: Acceptable

M: Specific Management Provisions required to address interaction. Refer to management direction in for specific planning units

S: Siting Criteria established to address interaction

T: Timing window established to address activities/uses during critical periods

R: Criteria identified to trigger provincial interagency referral

NC: Not Compatible – no overlap permitted

Sources:

MOU: November 2001 MOU between BCAL (LWBC) and Provincial Referral Agencies

SMP: Provincial Shellfish Management Plan – MAFF/LWBC

FMP: LWBC Commercial Finfish Aquaculture Management Plan Schedule C

Use/Resource Compatibility and Referral Requirements : Shellfish Beach Aquaculture

Water Depth	
Salmon Stream (mouth)	S- Shellfish culture is not to be conducted within the braided channels of any salmonid creek. (SMP) T - Activities are to be timed to minimize impacts on plants and animals (e.g. avoiding main spawning windows) (SMP)
Clam/ Oyster Beach	R - No overlap, referral to WLAP required if application is within 100m (MOU)
Eelgrass Beds	NC: No overlap – 5m minimum (SMP) R: referral to WLAP required if application is within 100m. (MOU) S: Installation of any structures must not alter or disrupt eelgrass habitats (MOU,SMP)
Kelp Beds	NC - No gear and/or floating structures to be established over kelp bed habitats (SMP)
Rocky Reefs	NC - No gear and/or floating structures to be established over rocky reef habitats (SMP)
Estuaries/ Lagoons	R: Referral to WLAP required if application is within100m(MOU)
Salt Marshes and Mudflats	R: Where identified as a sensitive ecosystem, a provincial tenure is required for applications within 30m (MOU) M - Installation of any structures must not alter or disrupt salt marsh habitats (SMP)
Seal/ Sea lion Haulout	R: Referral to WLAP required if application is within 500m (MOU)
Whale Feeding Areas or Migration Pathways	R: Referral to WLAP required if application is within 500m (MOU)
Eulachon Migration and Rearing	T - Activities are to be timed to minimize impacts on plants and animals (e.g. avoiding main spawning windows) (SMP)
Herring Spawning and Migration	T - Activities are to be timed to minimize impacts on plants and animals (e.g. avoiding main spawning windows) (SMP)
Waterfowl habitat	M – Uncultivated or harvested "leave strips" should be incorporated within the design of beach culture tenures to minimize overall impact on shore birds. Leave strips to cover at least 30% of the tenure area at any given time. (MOU BMP) T - Where possible, aquaculture activity should take place during periods of low bird use (Both seasonal and diurnal) (MOU BMP)
Seabird Colonies	R: Referral to WLAP required if application is within 500m - Includes rafting and congregating areas as well as colonies (MOU)
Wildlife Trees/ Heronries	R: Referral to WLAP required if application is within 100m (MOU)
Invertebrate Habitat	R: Where identified as a sensitive ecosystem, a provincial tenure is required for applications within 30m (MOU)
Red/ Blue Species	M – species specific considerations
Parks, Ecological Reserves, Marine Protected Areas	NC
Areas of significant heritage or cultural value	To be addressed through referrals to MSRM: Archaeology and Registry Services Branch and affected First Nations

Use/Resource Compatibility and Referral Requirements: Shellfish Deep Water Aquaculture

Water Depth	
Salmon Stream (mouth)	S - Shellfish culture is not to be conducted within the braided channels of any salmonid creek. (SMP) T - Activities are to be timed to minimize impacts on plants and animals (e.g. avoiding main spawning windows) (SMP)
Clam/ Oyster Beach	R - No overlap. Referral to WLAP required if application is within 100m (MOU)
Eelgrass Beds	NC - No overlap – 5m minimum buffer(SMP) R: Referral to WLAP required if application is within 100m. (MOU)

	S: Installation of any structures must not alter or disrupt eelgrass habitats (MOU, SMP)
Kelp Beds	NC - No gear and/or floating structures to be established over kelp bed habitats (SMP)
Rocky Reefs	NC - No gear and/or floating structures to be established over rocky reef habitats (SMP)
Estuaries/ Lagoons	R: Referral to WLAP required if application is within 100m (MOU)
Salt Marshes and Mudflats	R: Where identified as a sensitive ecosystem, a provincial tenure is required for applications within 30m (MOU) M - Installation of any structures must not alter or disrupt salt marsh habitats (SMP)
Seal/ Sea lion Haulout	R: Referral to WLAP required if application is within 500m (MOU)
Whale Feeding Areas or Migration Pathways	R: Referral to WLAP required if application is within 500m (MOU)
Eulachon Migration and Rearing	T - Activities are to be timed to minimize impacts on plants and animals (e.g. avoiding main spawning windows) (SMP)
Herring Spawning and Migration	T Activities are to be timed to minimize impacts on plants and animals (e.g. avoiding main spawning windows) (SMP) M – Herring spawn on longlines be left until eggs hatch and larvae emerge (SMP)
Waterfowl habitat	M - Longline netting (where used) should extend a minimum of 20m below the surface of the water to minimize conflict with diving ducks. (MOU BMP) T - Where possible, aquaculture activity should take place during periods of low bird use (Both seasonal and diurnal) (MOU BMP)
Seabird Colonies	R: Referral to WLAP required if application is within 500m Includes rafting and congregating areas as well as colonies (MOU)
Wildlife Trees/ Heronries	R: Referral to WLAP required if application is within 100m (MOU)
Invertebrate Habitat	R: Where identified as a sensitive ecosystem, a provincial tenure is required for applications within 30m (MOU)
Red/ Blue Species	M: species specific considerations
Parks, Ecological Reserves, Marine Protected Areas	NC
Areas of significant heritage or cultural value	R: Address through referrals to MSRM: Archaeology and Registry Services Branch and affected First Nations

Siting and Compatibility Criteria for Finfish Aquaculture

Water Depth	
Salmon Stream (mouth)	S: 1km from mouth of salmonid-bearing stream as determined to be significant by DFO and the Province (FMP)
Clam/ Oyster Beach	S: 125m /300m A minimum spacing of 125 m is required from all shellfish beds and commercial shellfish growing operations. (FMP) At least 300m must separate finfish aquaculture sites and inter-tidal shellfish beds that have regular or traditional use for First Nations, recreational or commercial fisheries where beds are exposed to water flow from a salmon farm. (FMP)
Eelgrass Beds	M - Where identified as sensitive (as defined by DFO and the province), fish habitat an appropriate siting distance will be determined by DFO and the Province. (FMP)
Kelp Beds	M - Where identified as sensitive (as defined by DFO and the province), fish habitat, an appropriate siting distance will be determined by DFO and the Province. (FMP)
Rocky Reefs	M - Where identified as sensitive(as defined by DFO and the province), fish habitat, an appropriate distance will be determined (FMP)
Estuaries/ Lagoons	M - Where identified as sensitive (as defined by DFO and the

	province), fish habitat, an appropriate distance will be determined by DFO and the Province (FMP)
Salt Marshes and Mudflats	M - Where identified as sensitive (as defined by DFO and the province), fish habitat, an appropriate distance will be determined by DFO and the Province (FMP)
Seal/ Sea lion Haulout	M - Appropriate distance from areas extensively used by marine mammals to be determined by DFO and the Province.(FMP)
Whale Feeding Areas or Migration Pathways	M - Appropriate distance from areas extensively used by marine mammals to be determined by DFO and the Province.(FMP)
Eulachon Migration and Rearing	M
Herring Spawning and Migration	1km - Where herring spawning areas are designated as vital, major or important by DFO and the Province. (FMP)
Waterfowl habitat	-
Seabird Colonies	-
Wildlife Trees/ Heronries	-
Invertebrate Habitat	S - Where invertebrate habitat includes surveyed commercial dive fishery areas, siting should ensure that surveyed areas are not alienated from harvesting (FMP)
Red/ Blue Species	M – species specific considerations
Parks, Ecological Reserves, Marine Protected Areas	1km - Siting not within line of sight up to 1km in all directions from existing or approved proposals for federal, provincial or regional parks and MPAs, existing or approved proposals for ecological reserves <1000ha (FMP)
Areas of significant heritage or cultural value	R: Address through referrals to MSRM: Archaeology and Registry Services Branch and affected First Nations

Siting and Compatibility Criteria for Log handling storage and infrastructure

Water Depth	S: Log boom and booming grounds require water depth at least 20m. (MOU) S: Heli-log drop areas require water depth at least 25m and are not allowed to strike bottom when released. (MOU) S: Log dumps must be located so that logs can be watered at any tide without grounding (MOU).
Salmon Stream (mouth)	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 100m (MOU)
Clam/ Oyster Beach	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 200m (MOU) S: Intertidal wood storage is not permitted; suitable precautions to be taken to ensure this does not occur under any conditions of tide, current, weather. Dragging of logs across beach areas is not permitted (MOU)
Eelgrass Beds	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 100m (MOU)
Kelp Beds	-
Rocky Reefs	-
Estuaries/ Lagoons	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 100m (MOU)
Salt Marshes and Mudflats	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 100m (MOU)
Seal/ Sea lion Haulout	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 500m (MOU)
Whale Feeding Areas or Migration Pathways	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 1km from migration pathways only (MOU)
Eulachon Migration and Rearing	M: To be determined on a site by site basis (DFO BMP)
Herring Spawning and Migration	T: refer to DFO for timing windows associated with herring spawn activities

Waterfowl habitat	-
Seabird Colonies	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 200 m from seabird congregating areas and 1km from seabird colonies, (MOU)
Wildlife Trees/ Heronries	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 100m for wildlife trees, 300m from Heronries. (MOU) S: Helicopter flight paths should be routed a minimum of 1 km from eagle nest trees or Heronries (MOU BMP)
Invertebrate Habitat	-
Red/ Blue Species	M: species specific considerations
Parks, Ecological Reserves, Marine Protected Areas	NC
Areas of significant heritage or cultural value	R: Address through referrals to MSRM: Archaeology and Registry Services Branch and affected First Nations

Siting and Compatibility Criteria for Private Docks

Water Depth	M - Boats, floats and other floating structures should be located and firmly moored in deep water, far enough offshore to prevent grounding at low tide (MOU BMP)
Salmon Stream (mouth)	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 100m from spawning areas
Clam/ Oyster Beach	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 125m
Eelgrass Beds	NC - Not compatible except where approved by DFO
Kelp Beds	NC - Not compatible except where approved by DFO
Rocky Reefs	-
Estuaries/ Lagoons	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 100m
Salt Marshes and Mudflats	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 30m
Seal/ Sea lion Haulout	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 250m
Whale Feeding Areas or Migration Pathways	-
Eulachon Migration and Rearing	-
Herring Spawning and Migration	-
Waterfowl habitat	-
Seabird Colonies	S: In the absence of a response from DFO, WLAP recommends a minimum separation of 500m a from seabird colony, 100m from seabird congregating areas
Wildlife Trees/ Heronries	-
Invertebrate Habitat	-
Red/ Blue Species	-
Parks, Ecological Reserves, Marine Protected Areas	NC
Areas of significant heritage or cultural value	R: Address through referrals to MSRM: Archaeology and Registry Services Branch and affected First Nations

Siting and Compatibility Criteria for Communication Sites

Water Depth	-
Salmon Stream (mouth)	30m
Clam/ Oyster Beach	-
Eelgrass Beds	-
Kelp Beds	-

Rocky Reefs	-
Estuaries/ Lagoons	30m
Salt Marshes and Mudflats	-
Seal/ Sea lion Haulout	200m
Whale Feeding Areas or Migration Pathways	
Eulachon Migration and Rearing	
Herring Spawning and Migration	
Waterfowl habitat	
Seabird Colonies	NC - no overlap with seabird colonies accepted except in critical situations where no other option exists. Referral required (MOU)
Wildlife Trees/ Heronries	100m
Invertebrate Habitat	
Red/ Blue Species	
Parks, Ecological Reserves, Marine Protected Areas	
Areas of significant heritage or cultural value	

Siting and Compatibility Criteria for Private / Public Utilities

Water Depth	
Salmon Stream (mouth)	30m - Distance specified for salmonid spawning areas
Clam/ Oyster Beach	60m
Eelgrass Beds	30m
Kelp Beds	
Rocky Reefs	
Estuaries/ Lagoons	60m
Salt Marshes and Mudflats	NC
Seal/ Sea lion Haulout	100m
Whale Feeding Areas or Migration Pathways	
Eulachon Migration and Rearing	
Herring Spawning and Migration	
Waterfowl habitat	
Seabird Colonies	300m - Alternately installation to occur outside of nesting/rearing period.
Wildlife Trees/ Heronries	100m
Invertebrate Habitat	
Red/ Blue Species	
Parks, Ecological Reserves, Marine Protected Areas	
Areas of significant heritage or cultural value	

Siting and Compatibility Criteria for Floating Lodges and Base Camps

Water Depth	
Salmon Stream (mouth)	30m 60m 300m - 30 m buffer for streams except stream approaches and crossings; 60m buffer specified for salmonid spawning areas. 300m specified for grizzly and/or black bear fishing sites. (MOU) 15m30m - Spacing specified for sanitary and domestic waste facilities. 15m separation is the minimum acceptable buffer for self-contained or composting facilities, 30m for all others.
Clam/ Oyster Beach	60m 150m - 150m distance required for docks and outfalls (MOU) 15m30m - Spacing specified for sanitary and domestic waste facilities.

	15m separation is the minimum acceptable buffer for self-contained or composting facilities, 30m for all others.
Eelgrass Beds	NC
Kelp Beds	30m - Where identified as a sensitive ecosystem (MOU)
Rocky Reefs	30m - Where identified as a sensitive ecosystem (MOU)
Estuaries/ Lagoons	30m - Raised walkways may be acceptable (MOU)
Salt Marshes and Mudflats	30m
Seal/ Sea lion Haulout	
Whale Feeding Areas or Migration Pathways	
Eulachon Migration and Rearing	
Herring Spawning and Migration	
Waterfowl habitat	
Seabird Colonies	200m
Wildlife Trees/ Heronries	100m/ 200m - 200m for heronries (MOU)
Invertebrate Habitat	
Red/ Blue Species	
Parks, Ecological Reserves, Marine Protected Areas	
Areas of significant heritage or cultural value	
Siting and Compatibility Criteria for Commercial Recreation Guiding	
Water Depth	
Salmon Stream (mouth)	15m 30m - Spacing specified for sanitary and domestic waste facilities. 15m separation is the minimum acceptable buffer for self-contained or composting facilities, 30m for all others.
Clam/ Oyster Beach	15m30m - Spacing specified for sanitary and domestic waste facilities. 15m separation is the minimum acceptable buffer for self-contained or composting facilities, 30m for all others.
Eelgrass Beds	
Kelp Beds	
Rocky Reefs	
Estuaries/ Lagoons	NC - Kayak landing sites should be located away from estuaries and lagoons. Landing sites should be located and used in a way to minimize physical and biological impacts to the foreshore (MOU BMP)
Salt Marshes and Mudflats	NC - Kayak landing sites should be located away from salt marshes. Landing sites should be located and used in a way to minimize physical and biological impacts to the foreshore (MOU BMP)
Seal/ Sea lion Haulout	
Whale Feeding Areas or Migration Pathways	
Eulachon Migration and Rearing	
Herring Spawning and Migration	
Waterfowl habitat	
Seabird Colonies	
Wildlife Trees/ Heronries	
Invertebrate Habitat	
Red/ Blue Species	
Parks, Ecological Reserves, Marine Protected Areas	
Areas of significant heritage or cultural value	

Appendix 5. Supporting Information for Environmental Risk

Figure A5.1: General Approach to Environmental Risk Assessment for Individual Planning Units

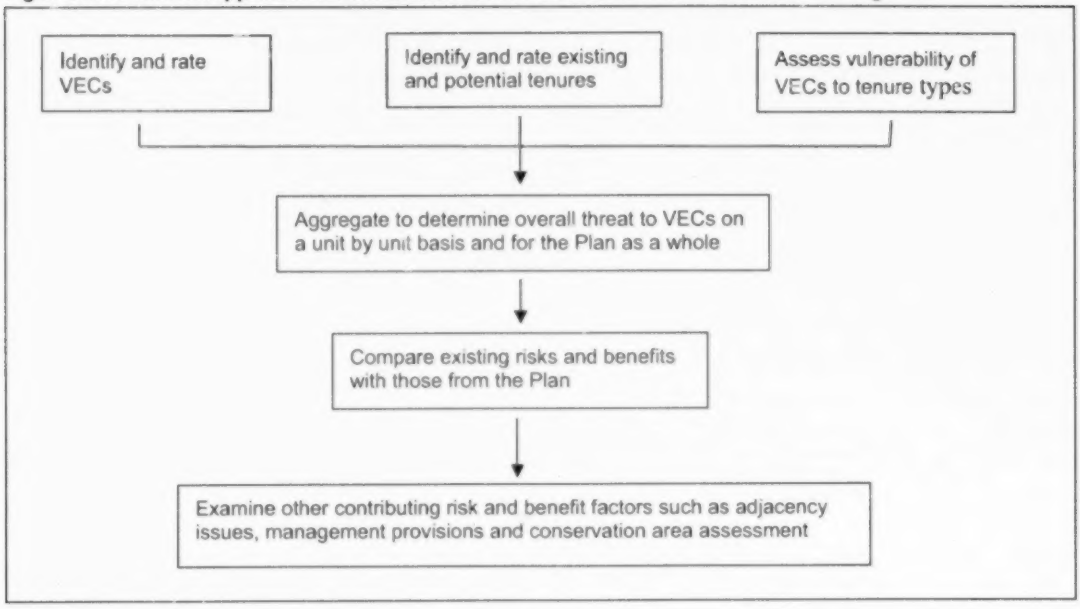

Identify and rate VECs
Identify and rate existing and potential tenures
Assess vulnerability of VECs to tenure types
Aggregate to determine overall threat to VECs on a unit by unit basis and for the Plan as a whole
Compare existing risks and benefits with those from the Plan
Examine other contributing risk and benefit factors such as adjacency issues, management provisions and conservation area assessment

Figure A5.2. Rating scheme for Valued Environmental Components

Valued Environmental Component	Measurement	Rating
Kelp beds	# hectares/bed	1 = >0 - < 200 ha 2 = 200 - < 400 ha 3 = > 400 ha
Clam beaches	# hectares/bed	1 = >0 - < 50 ha 2 = 50 - < 100 ha 3 = > 100 ha
Salmon streams	# salmonid streams	1 = > 0 - < 10 streams 2 = 10 - < 20 streams 3 = > 20 streams
Eelgrass	# hectares/bed	1 = >0 - < 50 ha 2 = 50 - < 100 ha 3 = > 100 ha
Birds	Presence	3 = CWS area of interest
Sea Otters, Seal and sea lions	Presence	3 = occurrence of haul out and rafting sites

Figure A5.3. Rating scheme for existing tenures

Existing Tenures	Rating
0	0
< 10	1
10 - <20	2
> 20	3

Figure A4. Rating scheme for VEC/land use interactions

VECs → Tenured Activities ↓	Kelp (K)	Clam (C)	Salmon (S)	Eelgrass (E)	Birds (B)	Pinnipeds (P)
Shellfish Beach Aquaculture (SBAQ)	1	2[a]	1	1	1	1
Shellfish Deepwater Aquaculture (SDAQ)	1	2[a]	1	1	1	1
Marine Plant Aquaculture (MPAQ)	1	1	1	1	2[b]	2[b]
Finfish Aquaculture (FFAQ)	1	1	2[c]	1	2[d]	2[e]
Log Handling (LOG)	2[f]	1	1	2[h]	1	1
Public Docks (PUBLIC)	3[g]	3[g]	3[g]	2[g]	3[g]	3[g]
Commercial & Industrial Docks (COMM/IND)	3[g]	3[f]	3[g]	2[g]	3[g]	3[g]
Private Docks (PRIV)	2[h]	1	1	2[h]	1	1
Float Homes (FLOAT)	3[i]	3[i]	3[i]	3[i]	3[i]	3[i]
Marine Telecommunications & Utilities (MTU)	2[j]	2[j]	1	2[j]	1	1
Commercial Recreation Guiding (CRG)	3[g]	3[g]	3[g]	3[g]	3[g]	3[g]
Floating Lodges & Base Camps (FLBC)	1[k]	1	1	1	2[l]	2[l]

Potential interactions were rated on a scale from 0 to 3 as follows:

0 = There is likely no interaction between VEC and activity

1 = Siting criteria and other mitigation measures reduce impact considerably or VEC has limited sensitivity to activity.

2 = Siting criteria apply but there is residual impact, or no siting criteria apply and VEC is moderately sensitive to the activity.

3 = No siting criteria or mitigation measures apply and significant impact is likely

Notes on specific interactions:

a. Siting criteria prohibit overlap, but potential impact on natural beds from broadcasting.
b. No siting criteria and potential for birds and pinnipeds to be disturbed by activity.
c. 1 km separation distance required, but potential for larger scale impact due to escapement.
d. No separation distance required and potential impact to birds being attracted to sites.
e. Although management provisions in place, no separation distance is required.
f. No separation distance or specific management provisions and potential impacts could result from woody debris.
g. No siting criteria required and potential impact from physical structures or from affecting water flow and sedimentation patterns.
h. Siting criteria prohibit overlap, but potential impact from affecting water flow and sedimentation patterns.

i. No siting criteria required and potential significant impact from physical structures, waste discharges and disturbance to birds and pinnipeds.
j. No siting criteria required and potential impact from physical structures.
k. No siting criteria and potential impact from underwater recreation activities such as diving.
l. No siting criteria and potential impact due to disturbance.

Figure A5.4. Rating scheme for acceptability of tenure applications

Recommendation	Rating
Not Acceptable (X)	0
Conditionally Acceptable (O), Acceptable (✓)	1

Figure A5.5. Rating scheme for environmental risk

Unit risk total	Rating
< 50	Low
50 - < 100	Moderate
>= 100	High

Figure A5.6. Summary of Quantitative Unit by Unit Environmental Risk Assessment

Unit	Emphasis	Existing Environmental Risk		Plan Environmental Risk		Residual Risk Class		Aggregate Risk Class
		Habitat VECs	Species VECs	Habitat VECs	Species VECs	Habitat VECs	Species VECs	
1	General	16	7	56	42	Low 40	Low 35	Moderate 75
2	General	10	30	24	56	Low 14	Low 26	Low 40
3	General	0	0	0	0	none 0	none 0	none 0
4	General	5	12	17	50	Low 12	Low 38	Low 50
5	General	16	15	35	39	Low 19	Low 24	Low 43
6	Conservation	0	0	7	12	Low 7	Low 12	Low 19
7	Conservation	0	0	8	9	Low 8	Low 9	Low 17
8	General	14	24	45	60	Low 31	Low 36	Moderate 67
9	Conservation	0	0	18	0	Low 18	none 0	Low 18
10	Conservation	0	0	18	27	Low 18	none 27	Low 45
11	Community	73	78	95	120	Low 22	Low 42	Moderate 64
12	General	1	0	3	0	Low 2	none 0	Low 2
13	General	4	3	42	45	Low 38	Low 42	Moderate 80
14	General	0	0	0	39	none 0	Low 39	Low 39
15	General	0	0	0	0	none 0	none 0	none 0
16	General	8	0	39	0	Low 31	none 0	Low 31
17	General	7	6	29	25	Low 22	Low 19	Moderate 41
18	General	1	0	7	0	Low 6	none 0	Low 6
19	General	0	0	5	12	none 5	none 12	none 17

Figure A5.7. Distribution of biological attributes among management emphasis categories

Key Biological Attributes	Management Emphasis		
	Conservation (4 units)	General (14 units)	Community (1 unit)
Threatened/Endangered Species			
Red listed species (# of species present)	9	7	6
Blue listed species (# of species present)	9	5	6
Benthic Habitats			
Estuary (ha)	0	187	0
Eelgrass beds (ha)	0	121	31
Kelp beds (ha)	728	12	90
Invertebrates			
Intertidal clams (ha)	1	191	54
Prawn values (# units present)	3	8	1
Seacucumber (# units present)	1	3	1
Fish			
Herring spawn (# record spawns)	23	64	29
Salmon migration (# units present)	1	5	1
Salmonid streams (# streams)	5	110	10
Rockfish values (#units present)	1	2	1
Birds			
CWS area of interest (# units present)	3	8	0
Migratory birds(# units present)	1	6	1
Shorebirds(# units present)	7	3	0
Waterfowl(# units present)	11	3	1
Alcids(# units present)	3	5	1
Eagles(# of sites present)	11	52	9

Appendix 6. References

A Community-Based Tourism Planning Process Model: Kyuquot Sound Area, BC, David P. Pinel, Masters Thesis, University of Guelph, April 1998

Aboriginal Labour Force Characteristics from the 1996 Census, Indian and Northern Affairs Canada, March, 2001.

An Overview of Key Conservation, Recreation and Cultural Heritage Values in British Columbia's Marine Environment. BC Land Use Coordination Office, Victoria BC, 1997.

Bennett, B. 1989. *The Oceanic Field Guide to the Gray Whale*. Sasquatch Books, WA. 50 p.

Bodkin, M.B. 1988. Effects of kelp forest removal on associated fish assemblages in central California, J. Exp. Mar. Biol. Ecol. 117:227-238.

Bodkin, M.B. 1986. Fish assemblages in *Macrocystis* and *Nereocystis* forests off central California. US Natl. Mar. Fish. Bull. 84:799-807.

Breen, P.A., T.A. Carson, J.B. Foster, and E.A. Stewart. 1982. Changes in sub-tidal community structure associated with British Columbia sea otter transplants. Mar. Ecol. Prog. Ser. 7:13-20.

BC Commercial Catch Statistics – 1995. Fisheries and Oceans Canada (Vancouver 2002), http://www-sci.pac.dfo-mpo.gc.ca/sa/Commercial/commhome.htm.

BC Salmon Farm Industry Quick Facts – 2000. BC Ministry of Agriculture, Food and Fisheries (Victoria 2002), http://www.agf.gov.bc.ca/fisheries/index.htm.

Biogeoclimatic Zones of British Columbia. BC Ministry of Forests, Victoria BC, 1988.

British Columbia Local Area Economic Dependencies and Impact Ratios- 1996, May, 1999; also unpublished data.

Caldwell, D.K. and M.C. Caldwell. 1980. The Audubon Society Field Guide to North American Fishes, Whales, and Dolphins. New York: Alfred A. Knopf Inc. 848 p.

Community Facts – Comox Strathcona Regional District, BC Statistics, Ministry of Management Services, (Victoria 2001).

Campbell Prentice, A. and W.S. Boyd. 1988. Intertidal and adjacent upland habitat in estuaries on the east coast of Vancouver Island – a pilot assessment of their historical changes. Can. Wildl. Serv. Tech. Rep. Ser. No 38, Delta, BC.

Campbell River Forest District Profile, Campbell River Forest District, BC Ministry of Forests (Victoria 2002), http://www.for.gov.bc.ca/vancouvr/district/campbell/index.htm

Canadian Tide and Current Tables 2002, Vol. 6. Hydrographic Chart Distribution Office, Fisheries and Oceans Canada, (Ottawa 2002).

Cook, F. R. 1981. Status Report on the Leatherback Turtle, Dermochelys coriacea, in Canada. Committee on the Status of Endangered Wildlife in Canada. 20 pp.

Cowan, I.M. and C.J. Guiguet. 1960. The Mammals of British Columbia. British Columbia Provincial Museum Handbook. No 11. 413 p.

Department of Fisheries and Oceans. 2003. Fisheries and Oceans Canada Pacific Region Catch Statistics website. http://www.pac.dfo-mpo.gc.ca/ops/fm

Department of Fisheries and Oceans. 2002a. Fish Stocks of the Pacific Coast: Online Book. http://www-comm.pac.dfo-mpo.gc.ca/publications/speciesbook/default_e.htm

Department of Fisheries and Oceans. 2002b. Geoduck Fishery – Pacific Region, Overview of the Fishery. Fisheries and Oceans Pacific Region website. Nov 19, 2002.

Department of Fisheries and Oceans. 2001. Lingcod (Ophiodon elongatus). DFO Science Stock Status Report A6-18 (2001). 5 pp.

Department of Fisheries and Oceans. 2000. FishWizard Maps and Escapement Information for the Artlish River. http://pisces.env.gov.bc.ca/FishWizardFrames.asp

Dorcey, A.H., K.J. Hall, D.A. Levy and I. Tesaki. 1983. Estuarine Habitat management: A Prospectus for Tilbury Slough. Westwater Research Centre, U.B.C. Vancouver, B.C. 62 pp.

Duggins, D.O., J.E. Eckman, and A.T. Sewell. 1990. Ecology of understory kelp environments. II. Effects of kelp on recruitment of benthic invertebrates. J. Exp. Mar. Biol. Ecol. 143:27-45.

Duggins, D.O., C.A.Simenstad, and J.A. Estes. 1989. Magnification of secondary production by kelp detritus in coastal marine ecosystems. Science. 245:170-173.

Ebeling, A.W., and D.R. Laur. 1988. Fish populations in kelp forests without sea otters: effects of sever storm damage and destructive sea urchin grazing, p. 169-191. In, VanBlaricom, G.R., and J.A. Estes (eds.). The Community ecology or Sea Otters. Springer Verlag, Berlin.

Economic Impacts of the British Columbia Salmon Farming Industry, Coopers & Lybrand, 1997.

Eichbaum, W.M. 1996. The role of marine and coastal protected areas in the conservation and sustainable use of biological diversity. Oceanography, Vol 9. No. 1 pp. 60-70.

Ellis, G. Fisheries and Oceans Canada. Leatherback Turtle Recovery Team. 2003. Personal Communication.

Ellis, G. Fisheries and Oceans Canada. Pacific Biological Station, Nanaimo. 2003. Personal Communication.

Executive Summary on the Green Energy Report for British Columbia Phase 1: Vancouver Island, Power Supply Engineering Report PSE389, BC Hydro, Vancouver BC, July 2001.

Exploring the South Coast of British Columbia, 2nd Edition, Don Douglass and Reanne Hemingway-Douglass; Fine Edge Productions, Anacortes WA, 1999.

Fishing for Money, G. Gislason, et al, June 1998.

Fish Habitat Inventory and Information Program (FHIIP). 1990. Stream Summary Catalogue. Subdistrict 26, Kyuquot. Department of Fisheries and Oceans, Vancouver, B.C. 200+ pp.

Ford, J.K.B., G.M. Ellis, and K.C. Balcomb. 1994. Killer Whales. Univ. of British Columbia Press, Vancouver. 102 p.

Ford, J.K.B. and G.M. Ellis. 1999. Transients – Mammal Hunting Killer Whales. Univ. of British Columbia Press, Vancouver. 96 p.

Fourth Quarter 2001, BC Statistics, Ministry of Management Services, (Victoria 2002).

Growing Tourism on Crown Lands, North Vancouver Island Pilot Project. BC Ministry of Small Business, Tourism and Culture, Tourism and Corporate Policy Division, Victoria BC, March 2001.

Hickman, C.P. 1986. Integrated Principles of Zoology. Worth Publishers, Inc, New York, U.S.A.

John, L. Kyuquot Checleset First Nation – Fisheries Department. 2003. Personal Communication.

Ka:'yu:'k't'h'/Che:k'tles7et'h' Nation Cultural Heritage Site Review Project Final Report, Shoreline Archaeological Services Inc. (Victoria 2001).

Kyuquot Region Forest Sector Strategic Plan: Economic Profile, Needs Analysis and Potential Opportunities. Synergy Management Group Ltd. Forest Renewal BC (Nanaimo 1998)

Laur, D.R., A.W. Ebeling, and D.A> Coon. 1988. Effects of sea otter foraging on sub-tidal reef communities off central California, p. 151-167. *In*, VanBlaricom, G.R., and J.A. Estes (eds.). The Community ecology or Sea Otters. Springer Verlag, Berlin.

Leaman, B.M. 1976. The association between the black rockfish (*Sebastes melanops* Girard) and beds of giant kelp (*Macrocystis integrifolia* Bory) in Barkley Sound, British Columbia. MSc. thesis, Univ. of British Columbia, 109p.

Map of Geographical Extents, Comox Strathcona Regional District (Courtenay 2002), http://www.rdcs.bc.ca/.

Metal Operations and Explorations Mapping, BC Ministry of Energy and Mines (Victoria 2002), http://www.em.gov.bc.ca/Mining/MiningStats/24opermetalmapsindex.htm

Mineral Titles Search, BC Ministry of Energy and Mines (Victoria 2002), http://www.em.gov.bc.ca/Mining/Titles/TitlesSearch/default.htm

MINFILE Mapsheets 092L and 102I, Programs and Services, BC Ministry of Energy and Mines, 1999 (posted at www.em.gov.bc.ca/Mining/Geolsurv/MINFILE)

Morgan, K.H., K. Vermeer and R.W. McKelvey. 2002. Atlas of pelagic birds of western Canada. Occasional paper No 72. Canadian Wildlife Service. 72 p.

Morgan. K.H., R.W. Butler and K. Vermeer. 1992. Environmental disturbance and conservation of marine shoreline birds on the west coast of Vancouver Island. *In*, Vermeer, K., R.W. Butler and K.H. Morgan (eds.). The ecology, status, and conservation of marine and shoreline birds on the west coast of Vancouver Island. 75:129-133.

Morrison, J., DFO. 2003. Underwater Harvesters Newlsetter. Vol 10, Issue 1, January 2003. 4 pp.

Net Work: Information From the BC Salmon Farmers, BC Salmon Farmers Association, (2002). Posted at www.salmonfarmers.org

North Island Straits Coastal Plan, Coast & Marine Planning Branch, BC Ministry of Sustainable Resource Management, (Victoria 2002)

Northern Nuu-Chah-Nulth Economic Development Tourism Study, Catherine Berris Associates Ltd. et al, BC Ministry of Aboriginal Affairs, (Vancouver 2001)

O'Clair, R.M., and S.C. Lindstrom. 2000. North Pacific Seaweeds. Plant Press, Friday Harbor, WA. 161 pp.

Phillips, R.C. 1984. The ecology of eelgrass meadows in the Pacific northwest: a community profile. U.S. Fish. Wildl. Serv. Rep. FWS/OBS-84/24.

Plants of Coastal British Columbia, Jim Pojar and Andy MacKinnon, BC Ministry of Forests and Lone Pine Publishing, Vancouver BC, 1994.

Quarterly Regional Statistics, Comox Strathcona Regional District,

Regional District 25 Comox Strathcona Statistical Profile, BC Statistics, Ministry of Management Services, (Victoria 2001).

Sailing Directions, BC Coast (South Portion), Vol 1, 15th Edition, Canada Department of Fisheries and Oceans, Ottawa ON, 1990.

Salmon Aquaculture Review: Report of the Environmental Assessment Office, August, 1997.

Schalli, K. Canadian Food Inspection Agency. 2000. Personal Communication

Seashore of British Columbia Field Guide, Ian Shelton, Lone Pine Publishing, Vancouver BC, 1998.

Senger, R., DFO Habitat and Enhancement Branch. 1999. Personal Communication

Simenstad, C.A., J.S. Isakson, and R.E. Nakatani. 1977. Marine fish communities of Amchitka Island, Alaska, p. 451. *In*, Merrit, M.L. and R.G. Fuller (eds.).The Environment of Amchitka Island, Springfield, Va.

Statistics Canada, 1996 Census labour force data

Statistics Relating to Regional and Municipal Governments in BC, BC Ministry of Community, Aboriginal and Women's Services, (Victoria 2001).

Tourism Sector Monitor, BC Stats, Ministry of Management Services, Victoria (2001)

Welcome to Kyuquot travel information website, Kerby Cowan (2002), http://www.kyuquot.com.

Wind Energy Resource Map, BC Hydro (undated), (posted at www.bchydro.com/power_future).

Vermeer, K., R.W. Butler, and K.H. Morgan. 2002. The ecology, status, and conservation of marine and shoreline birds on the west coast of Vancouver Island. Occasional Paper No 75. Canadian Wildlife Service. 136 p.

Watson, J.C., Malaspina University College. 2003. Personal Communication

Whitehead, Hal. 1985. Updated Status Report on the Humpback whale, *Megaptera novaeangliae*, (North Pacific population) in Canada. Committee on the Status of Endangered Wildlife in Canada. 23 pp.

Wong, R. W., Checleset Bay Ecological Reserve Warden. 1989-present. Personal Communication.